

CHEMCLENE CORPORATION  
CORRECTIVE ACTION  
FACILITY INVESTIGATION  
CORRESPONDENCE

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# CHEMCLENE CORPORATION

MALVERN, PENNSYLVANIA 19355

April 23, 1982

Mr. Bruce Beitler  
Field Supervisor  
Pa. D.E.R.  
1875 New Hope St.  
Norristown, PA 19401

Dear Mr. Beitler,

This letter is to confirm our conversation of the morning of April 22, 1982 concerning recent findings at the former disposal area.

As you are aware, a Field Invertigation Team was here on April 8, 1982 along with Mr. Frank Holmes of D.E.R. They took several samples from the former disposal area including soil, water and probable waste material. We obtained from them, splits of all their samples.

We had three of these samples analyzed by Betz, Converse, Murdoch Inc. (BCM) and on the afternoon of April 21 received verbal results. The soil sample contained 440 ppm of Arochlor 1254, a PCB containing oil, the sample of a tar like substance contained 89 ppm and the water contained no PCB's down to the detectable limit of .04 ppb.

We then contacted Mr. Rich Grzywinski of BCM to discuss possible courses of action. It was agreed that additional samples would need to be taken after a preliminary investigation by BCM personnel, to determine the extent of migration, if any.

As I stated, also on the afternoon of April 21, 1982, we called the National Response Center and informed them of the former disposal area even though our obligation to do so under the regulations is vague at best.

On the afternoon of April 22, 18 samples of soil and water were taken by BCM personnel. Although they are not directly involved with their lab. they estimated 8 to 10 days for completion of the analyses.

We are in the process of gathering information from a number of experts in the field of PCB disposal and handling in an attempt determine possible remedial actions.

Once the results of the analyses are known, we would kile to meet with you to discuss the situation. Hopefully, your review of our groundwater study will be completed by then and can be included in the discussion. It looks like the week of May 10 would be a safe bet for a meeting. Please let us know what specific

AR000001

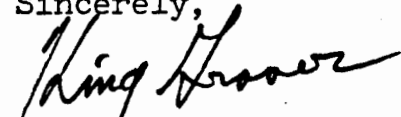
CHEMCLENE CORPORATION

April 23, 1982  
Mr. B. Beitler  
Page 2

day that week would be good for you and we will arraingne our schedule accordingly.

By copy of this letter, we are making notification to EPA, Region 3.

Sincerely,

  
King Graver

cc. Ms. Cathy Hodgkiss, EPA Region 3 ✓

→ Copy recd 1/12/83 KH.

AR000002

Department of Environmental Resources

1375 New Hope Street  
Harrisburg, PA 17101  
215 631-2420

RECEIVED  
Division of Operations

JUNE 1 1982

SOLID WASTE MANAGEMENT

June 11, 1982

Mr. King Graver, President  
Chem-Clene Corporation  
Malvern, PA 19355

Dear Mr. Graver:

This letter is to confirm agreements reached at our May 25, 1982 meeting concerning the clean-up of the former waste disposal areas and associated ground water contamination at the Chem-Clene facility. It is the Department's understanding that Chem-Clene will continue and complete the excavation and disposal of wastes and contaminated soils at the facility. It is also our understanding that Chem-Clene will institute a ground water treatment program and will continue ground water monitoring until waste disposal and ground water treatment activities are completed.

In order to clarify and document clean-up efforts, submissions addressing the following three activities must be made to the Department.

1. Disposal Area Evacuation:

The submission must present a detailed program and schedule for disposal of wastes contained in the open pit, covered pit and berm area of the site. The program must address drum sampling protocol and waste handling, transportation and disposal methods. Sampling and subsequent removal of contaminated soils associated with the three disposal areas, as well as a 10 foot by 10 foot area of contaminated soil at the former drum storage area by the plant, must be addressed. In addition, the submission must address how surface water run-on and run-off will be controlled at the disposal areas.

In any case, the Department anticipates the removal of all wastes from all three disposal areas by the end of 1983.

2. On-going Ground Water Sampling:

The submission must provide for continuing quarterly ground water sampling until completion of all clean-up activities. Approximately 4 to 6 on-site wells should be incorporated into a quarterly monitoring system. In addition, a well sampling program should be established involving adjacent private wells to insure that previous uncontaminated supplies have not become contaminated. It is the Department's understanding that complete VOA scans will be done on wells "UC3" and "UC5", and that future quarterly analyses will be confined to parameters found in the scans. It is also our understanding that an initial composite of all 4 to 6 monitoring wells will be analyzed for PCB's.

3. Ground Water Recovery and Treatment:

The submission must provide additional information and justification

AR000003

Mr. King Graver, President

June 11, 1982

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for the proposed ground water treatment system. Such information is to include:

- a. Number and location of recovery wells
- b. Pumping rates at each well
- c. Treatment and final disposition of water pumped. If various techniques are to be evaluated, the trial procedures and periods should be specified and should lead to the selection of a preferred technique.
- d. Needs for DNR Water Quality or DNRG permits must be addressed.

The Department recommends this information be gathered and submitted as an addendum to Chem-Clene's Hydrogeologic Study. It is felt that these submissions should be in to the Department by July 31, 1982.

A final issue discussed at our May 25 meeting concerned the solidification of still bottom sludges in bulk containers at the Chem-Clene site. The Department does not object to this being tried on an experimental basis so long as a specific operational plan be submitted and approved first. If the Department determines such solidification is causing any release of vapors or odors, or is otherwise causing a public nuisance the practice will have to be stopped.

It should be noted that the Department is willing to proceed with this informal clean-up agreement so long as progress continues in accordance with schedules specified in this letter, the hydrogeologic study, and the addendums specified in this letter. Failure to so proceed with clean-up activities at Chem-Clene will necessitate the Department to initiate formal legal action.

If you have any question concerning this matter, please contact me.

Very truly yours,

BRUCE D. BEITLER  
Operations Supervisor

cc: L. Thompson, Esq.

M. Steiner

W. Lynn

F. Holmes

W. Jolly

M. Shap

File

Re 30 11339

AR000004

## CHEMCLENE CORPORATION

MALVERN, PENNSYLVANIA 19355

July 1, 1982

Ms. Marilyn Shup  
Dept. of Environmental Resources  
Water Quality  
1875 New Hope St.  
Norristown, PA 19401

Dear Ms. Shup,

This letter is to request the necessary permit to discharge water which we will be treating by aeration to remove volatile organics. We will be pumping our well # CC-3 (see ground water study for location) which at last testing had a TCE level of 12,600 ppb. The flow rate for the well has been determined to be 3 to 6 gallons per minute and we do not anticipate modifying the well at this time, to increase the flow rate.

The initial technique we intend to use involves pumping the well and discharging the water through a series of small holes in a pipe on the high side of our roof. The water will then run down the roof in a thin sheet and will be collected in the rain gutter. This technique has been used successfully by another firm with similar contamination levels. Should one pass over the roof be insufficient, the water will be repumped to a different section of roof for another pass.

It is anticipated that, once pumping starts, it will be 4 to 6 weeks before definitive test results can be finalized. Should they show that this method is successful, we plan to continue the process on a 24 hour per day basis. The duration of the project is not known at this time and will depend on the change in ground water quality as determined by periodic testing. This testing will be done quarterly, to start, but may change to semi-annually at a future date.

Final disposition of the treated water will be to a natural low area west of the facility near well #CC-2.

I hope that I have provided enough information for you to issue the permit. Should you have any questions, please don't hesitate to call.

Sincerely,

  
King Graver

cc: Bruce Beitler  
Frank Holmes

AR000005

Department of Environmental Resources

1875 New Hope Street  
Norristown, PA 19401  
215 631-2420

May 10, 1983

Mr. Lloyd Balderston  
Chemclene Corporation  
258 North Phoenixville Pike  
Malvern, PA 19355

Re: Waste Dump Cleanup and  
Future Monitoring

Dear Mr. Balderston:

At a meeting on May 25, 1982 held among representatives of Pennsylvania Department of Environmental Resources and of Chemclene Corporation, an informal agreement was reached regarding a cleanup of waste disposal areas containing a variety of solvents in drums, the contaminated soils associated with these drums, and the monitoring, recovery, and treatment of groundwater in the affected areas. Subsequent to this meeting, a document entitled, "Addendum 1, Groundwater Quality Investigation for Chemclene Corporation, Malvern, PA" was prepared for Chemclene Corporation by Moorshead-Siddiqui and Associates in response to this Department's requirements that specific concerns be addressed as delineated in a letter from Bruce Beitler of Pennsylvania Department of Environmental Resources to Chemclene Corporation, June 11, 1982.

At this point in time, the Department feels that additional commentary is necessary regarding the cleanup and groundwater recovery:

1. The cleanup method as proposed for the former disposal areas is acceptable until shown to be otherwise.
2. The initial round of groundwater samples should be analyzed for the entire TCE series, e.g., TCE, 1,1,1-TCE, and PCE. In the future, 1,1,1-TCE and PCE might be deleted from the program provided that a trend toward decreasing concentrations is observed. If levels are sufficiently elevated above background, then analysis on a semi-annual or annual basis should be considered.
3. The following private water supplies should be included in the overall monitoring program: ID Nos. 17 and 19 of Area A; ID Nos. 56 and/or 57 of Area C.
4. Monitoring well GC-3 is suitably located for groundwater recovery. However, redesign or reconstruction of the well should be considered to increase yield.

AR000006

Mr. Lloyd Balderston

May 10, 1983

- 2 -

5. The discharge of aerated effluent from the groundwater recovery system to a natural depression near monitoring well CC-2 would require an emergency discharge permit from the Bureau of Water Quality Management. This was discussed between Mr. Lloyd Balderston of Chemclene and Marilyn Shup, Bureau of Water Quality Management, in a telephone conversation on August 19, 1982. In order to permit this discharge, the Bureau of Water Quality Management must know the quality of the proposed discharge. This can be determined by analysis of the effluent of the trial runs of groundwater through the air stripping process.
6. Alternate treatment options should be devised in the event the above described process proves ineffective after a sufficient testing period.
7. Effluent samples should be taken on a monthly basis for the first few months of operation to determine the effectiveness of this procedure. Effluent samples are required after each passage of water over the roof during the trial period. If two or more passes are required, a corresponding number of effluent samples must be taken in order to establish the extent of reduction in contaminant levels.
8. If the air stripping appears, after the trial efforts, to be viable, a status report should be submitted after the first three or four months of operation.

Recent inspections of the site have revealed that the cleanup operations are far behind the schedule agreed upon during the May 25, 1982 meeting, and as reported in the Addendum 1. The Department is seriously considering other options to the present informal agreement. To this end, Chemclene will be contacted in the near future for the purpose of arranging a meeting to discuss the matter of the cleanup. Please be advised that the Department intends to be represented by legal counsel at this meeting.

If you have any questions or comments regarding these matters, please feel free to contact me.

Very truly yours,

VICTOR JANOSIK

Solid Waste Operations Supervisor

cc: Frank Holmes

Louise Thompson

Bruce Beitler

Marilyn Shup

Phil Rotstein

East Whiteland Township

Chester County Solid Waste

King Graver

US EPA

Division of Hazardous Waste Management

Re F325

attn: Pat McManus

AR000007



## WOL BLOCK, SCHORR AND SOLIS- JHEN

TWELFTH FLOOR PACKARD BUILDING  
S.E. CORNER 15TH AND CHESTNUT STREETS  
PHILADELPHIA, PA. 19102

(215) 977-2000  
TELECOPIER: LO 9-1069

TWX: 710-670-1927

WOLBLORR PHA

FLORIDA OFFICE  
1655 PALM BEACH LAKES BOULEVARD  
P.O. BOX 027918  
WEST PALM BEACH, FLORIDA 33402  
(305) 471-3400  
TELECOPIER: (305) 684-4503

GERALD GORNISH  
MICHAEL J. HENRY  
ARTHUR A. ZATZ  
STEPHEN LEVIN  
ELIZABETH H. MAI  
JOSEPH S. FINKELSTEIN  
BRUCE S. KATCHER  
THOMAS J. GALLAGHER, III  
DEBRA LYNN GRUENSTEIN  
BERNARD LEE  
DAVID F. SIMON  
ARTHUR R. BLOCK  
M. NORMAN GOLDBERGER  
SANDRA A. BLOCH  
BURT M. RUBIN  
JEFFREY L. BRAFF  
LESLIE E. KIVITZ  
DONALD M. MILLINGER  
MELVYN J. TARNOPOL  
MARK J. AMRHEIN  
KENNETH J. WARREN  
ROBERT B. MCKINSTRY, JR.  
BLAKE D. RUBIN  
PAMELA S. GOODWIN  
WENDY L. BROWN  
SUSAN L. EXTEIN  
GREGORY R. GREENFIELD  
ROBERT A. SILVERMAN  
ANDREW A. CHIRLS  
ANDREW J. DUBROFF  
SCOTT A. ISDANER  
M. ELLEN MOFFETT  
ABBE G. SHAPIRO  
NEIL S. WITKES

ALBERT C. BRASLOW  
JOHN E. ROBERTS, JR.  
MARC E. GOLD  
ROBERT L. BLACKSBERG  
ROBERT D. LIEBENBERG  
MATTHEW H. K. S.  
LAURA A. FRIE  
LEWIS I. GANT  
BARRY M. KLAYMAN  
DIANE J. SIGMUND  
JASON M. SHARGEL  
BRIAN P. FLAHERTY  
ALAN I. GOLDBERG  
JEFFREY S. SALTZ  
MARK L. ALDERMAN  
LESLIE D. BRAM  
BRYNN L. MACIVER  
LAWRENCE S. PITT  
SHELLEY J. WINKLER  
ROBERT I. FRIEDMAN  
MARK R. ROSEN  
JEREMY T. ROSENBLUM  
CAROLE SHERMAN LEIS  
JERE G. THOMPSON  
GERALD A. CHAMBERLAIN  
DAVID GITLINT  
DALE L. MILESTONE  
WAYNE A. WEINER  
AMY L. BRANTZ  
RONALD L. GERN  
PATRICK MATUSKY  
STEPHEN A. RITT, JR.  
JAMES R. WILLIAMS

ROBERT B. WOLF  
MITCHELL E. PANZER  
RAYMOND J. BRADLEY  
FRANKLIN H. SPITZER  
ROBERT E. WACHS  
THONY S. MINISI  
BERT J. FELDMAN  
ELAN H. REUBEN  
HOWARD GITTIS  
SEYMOUR KURLAND  
GEORGE M. BRANTZ  
ROBERT M. SEGAL  
RAGAN A. HENRY  
ALAN H. MOLOD  
EDWARD M. GLICKMAN  
LOWELL H. DUBROW  
E. GERALD RIESENBAUGH  
JOSEPH M. MANKO  
RONALD M. WIENER  
WILLIAM J. MOREHOUSE  
DANIEL PROMISLO  
LEONARD J. BUCKI  
WILLIAM A. ROSOFF  
IVAN I. LIGHT  
JAMES A. ROSENSTEIN  
LOUIS COFFEY  
JUDITH R. COHN  
MARC M. SILBERT  
ROBERT MCL. BOOTE  
DAVID M. DORET  
IAN A. L. STROGATZ  
RICHARD H. GLANTON  
ARTHUR G. WROBLE\*  
PHILIP E. GARBER  
BARRY F. SCHWARTZ  
MICHAEL A. BUDIN

DONALD BEAN  
BERNARD M. BORISH  
FRANKLIN POUL  
DANIEL C. COHEN  
STANTON S. OSWALD  
ALVIN H. DORSKY  
DAVID J. KAUFMAN  
CARL W. SCHNEIDER  
MICHAEL M. DEAN  
MICHAEL L. TEMIN  
CHARLES G. KOPP  
ALAN J. DAVIS  
LEONARD J. COOPER  
STEVEN A. ARBITTIER  
HENRY F. MILLER  
JAY L. GOLDBERG  
HENRY A. GLADSTONE  
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GERALD J. MCCONOMY  
BERNARD CHANIN  
HAROLD JACOBS  
ROBERT C. PODWIL  
WILLIAM P. THORN  
PAUL E. SHAPIRO  
DONALD K. JOSEPH  
MICHAEL M. SHERMAN  
JAY R. BAER  
JAMES S. BURNS  
ALAN S. KAPLINSKY  
DENNIS L. COHEN  
GREGORY T. MAGARITY  
DAVID R. GLYN  
HERMAN C. FALA  
STEVEN B. KING  
HENRY L. SHRAGER  
HOWARD BREGMAN

June 1, 1983

\*ADMITTED TO FLORIDA BAR ONLY  
†ADMITTED TO NEW YORK BAR ONLY

## COUNSEL:

ALFRED L. WOLF  
HELEN SPIGEL SAX  
NATHAN SILBERSTEIN

SAMUEL H. LEVY  
MORRIS L. FORER  
JOSEPH BRANDSCHAIN

DIRECT DIAL NUMBER:

(215) 977- 2110

James Heenehan, Esquire  
United States Environmental  
Protection Agency, Region III  
6th and Walnut Streets  
Philadelphia, PA 19106

Dear Mr. Heenehan:

This is in response to the letter of May 25, 1983, from Thomas C. Voltaggio, Chief, Superfund Branch, to Lloyd Balderston, Chemclene Corporation, requesting information concerning the Chemclene site pursuant to the Resource Conservation and Recovery Act and the Comprehensive Environmental Response, Compensation and Liability Act. It is our understanding that the information sought pertains solely to the disposal area on the Chemclene site and the data will be gathered on that basis.

Given the breadth of the information requested in Mr. Voltaggio's letter, we will be unable to comply with the ten day response date and will need an additional 30 days to comply. Further, I expect that we will need additional guidance as to the scope of the information required by the letter once we begin to compile it and, accordingly, we will be contacting you prior to the expiration of our requested extension to assure that we fully comply with the request.

AR000008

W. B. S. & S-C.

James Heenehan, Esquire

Page Two

June 1, 1983

On a related matter, at the meeting of May 31, 1983, you and Mr. McManus requested certain information concerning the sampling of residential wells in the vicinity of the disposal area. Rather than submit information in a piecemeal fashion, we will include this information among the documents submitted in accordance with your request. If this is not satisfactory, please notify me.

I would appreciate it if you would confirm in writing that the requested extension has been granted.

Sincerely,

Marc E. Gold

For WOLF, BLOCK, SCHORR and SOLIS-COHEN

MEG/pd

cc: Mr. Lloyd Balderston

AR000009



COMMONWEALTH OF PENNSYLVANIA  
DEPARTMENT OF ENVIRONMENTAL RESOURCES  
1875 New Hope Street  
Norristown, PA 19401  
215 631-2420



June 13, 1983

Mr. Lloyd Balderston  
President  
Chemclene Corporation  
258 North Phoenixville Pike  
Malver, PA 19355

Re: Agreements Formulated During Meeting  
May 31, 1983

Dear Mr. Balderston:

This letter is to confirm agreements reached at our May 31, 1983 meeting. It is the understanding of this Department that Chemclene Corporation will continue and will complete the excavation and proper disposal of wastes and contaminated soils presently on the Chemclene property. This Department also understands that Chemclene will apply for the necessary permits, and will institute a suitable groundwater recovery and treatment program, and that groundwater monitoring will continue at least until the treatment activities are completed.

Specific items of agreement are delineated as follows:

1. The initial rounds of groundwater analysis will include PCE, TCE, 1,1,1-TCE.
2. The overall monitoring program will be expanded to include wells No. 17 and 19 of Area A; and either Well No. 56 or 57 or both of Area C.
3. Chemclene will obtain all permits required in order to lawfully extract and discharge groundwater. Permits necessary include an emergency discharge permit from the Bureau of Water Quality Management and, if necessary, the appropriate permit from the Delaware River Basin Commission.
4. Chemclene Corporation will remove wastes from the former<sup>er</sup> disposal area known as the "open pit" at a frequency of not less than eighty (80) drums every three weeks until all drums and contaminated water are removed from the pit and are properly disposed of. This process will be completed on or before October 31, 1983.
5. At the termination of the removal of the wastes as described in Item 4 above, but in any case, on or before November 30, 1983, Chemclene Corporation will have removed and sampled a minimum of eighty (80) drums of waste from the area known as the "closed pit". These drums and/or the wastes from these drums will be suitably secured pending proper disposal.
6. The soil remaining in the "open pit" will be sampled for contaminants on or before November 30, 1983.

AR000010

CHEMCLENE CORPORATION

MALVERN, PENNSYLVANIA 19355

(258 N. Phoenixville Pike)

JULY, 1983

Mr. Pat McManus 3AW22  
U. S. Environmental Protection Agency  
Region III  
6th and Walnut Streets  
Philadelphia, PA 19106

Dear Mr. McManus:

This is in response to your visit here on 14 July 1983 and the Agency's information request of 25 May 1983, the scope of which was narrowed to technical/environmental aspects at the 16 June 1983 meeting between Chemcene and the Agency.

Enclosed are copies of the documents you picked out during your 14 July visit. They are as follows:

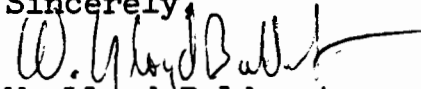
1. Cedar Grove Environmental analytical report of 13 June 1980 samples.
2. Sketch of former disposal area showing sampling for and results of PCB analysis (sampling done on 22 & 23 April 1982).
3. Analytical summary for all water wells sampled showing well number and date sampled (two page spread sheet).
4. Quality Control Laboratory analytical report of 15 September 1982 samples.
5. Cedar Grove Environmental analytical report of 7 May 1981 samples.
6. Cedar Grove Environmental analytical report of 30 January 1981 samples.
7. Quality Control Laboratory analytical report of CC-5 sample taken on 11 March 1982 (scan for all volatile organics).
8. AGES Laboratory analytical report of composite sample of material removed from open pit 16 November 1982. (two pages)
9. U. S. Department of Interior analytical report of sample taken from water well no. 36 (date taken, unknown; two pages plus cover letter).
10. Quality Control Laboratory analytical report of 13 June 1983 samples (two pages).

AR000012

11. Quality Control Laboratory analytical report of 20 April 1983 samples. (three pages)
12. Report entitled "Groundwater Quality Investigation for Chemclene Corporation, Frazer, Pennsylvania," November 1981, 32 pages plus appendices.
13. Activated carbon filter installation and replacement record.

Chemclene assumes this fulfills your initial request, as modified; please call me if you have any questions on this matter.

Sincerely,



W. Lloyd Balderston,  
President

cc: Mr. Marc Gold

AR000013



# Cedar Grove Environmental

Analytical Laboratories and Consultants

100 Gallagherville Road

(on the corner of Marshallton-Thorndale across from Shannon Airport)  
Downingtown, PA 19335 (215) 269-6977

RECEIVED

JUL 16 1981

Chemcene Corporation

RD # 1

Malvern, Pa. 19355

5 samples  
7 May 81

<u>Sample I.D.</u>	<u>1,1,1-Trichloroethane</u>	<u>1,1,2-Trichloroethene</u>	<u>1,1,2,2-Tetrachloroethene</u>
CC-1	190 ug/l	209 ug/l	84.5 ug/l
CC-2-10	12.4 ug/l	57.8 ug/l	7.3 ug/l
CC-2-20	13.3 ug/l	62.2 ug/l	7.0 ug/l
CC-2-60	17.0 ug/l	641 ug/l	3.0 ug/l
3-30	2,080 ug/l	12,600 ug/l	1,120 ug/l
CC-3-40	2,230 ug/l	12,600 ug/l	1,170 ug/l
CC-3-60	1,690 ug/l	10,500 ug/l	885 ug/l
CC-5-5	586 ug/l	1,180 ug/l	861 ug/l
CC-5-20	627 ug/l	1,310 ug/l	904 ug/l
CC-5-30	572 ug/l	1,270 ug/l	743 ug/l
10 A	114 ug/l	1,160 ug/l	254 ug/l
10 B	24.8 ug/l	32.1 ug/l	1.8 ug/l
23	4.2 ug/l	below 0.2 ug/l	below 0.2 ug/l
41	2.3 ug/l	below 0.2 ug/l	below 0.2 ug/l

Many samples contained additional organics that were unidentified.

AR000014



**Cedar Grove Environmental**  
**Analytical Laboratories and Consultants**

100 Gallagherville Road  
(on the corner of Marshallton-Thorndale across from Shannon Airport)  
Downingtown, PA 19335 (215) 269-6977

57 mg/L  
30 Jan 81

Chemclene Corporation  
RD#1  
Malvern, Pa. 19355  
Attn: Lloyd Balderston

<u>Sample I.D.</u>	<u>111 TCE</u>	<u>12 TCE</u>	<u>PCE</u>	<u>1112 &amp; 1122 Tetra</u>
00-1 1 ppb SW	11.4 ug/l	24.9 ug/l	2.2 ug/l	below 0.1 ug/l
00 Blank	8.4 ug/l	19.8 ug/l	1.5 ug/l	below 0.1 ug/l
15	6.6 ug/l	5.3 ug/l	0.8 ug/l	below 0.1 ug/l
17	2.1 ug/l	1.0 ug/l	0.4 ug/l	below 0.1 ug/l
19	2.1 ug/l	0.7 ug/l	1.5 ug/l	below 0.1 ug/l
7	2.0 ug/l	0.3 ug/l	0.7 ug/l	below 0.1 ug/l
21	2.7 ug/l	0.3 ug/l	0.6 ug/l	below 0.1 ug/l
23	3.7 ug/l	0.2 ug/l	2.0 ug/l	below 0.1 ug/l
33	5.0 ug/l	0.1 ug/l	0.4 ug/l	below 0.1 ug/l
36	38.2 ug/l	28.1 ug/l	3.8 ug/l	below 0.1 ug/l
42	0.4 ug/l	3.1 ug/l	0.8 ug/l	below 0.1 ug/l
43	3.4 ug/l	0.1 ug/l	0.4 ug/l	below 0.1 ug/l
41 B.F.F.R.F. FILTER	206 ug/l	219 ug/l	22.0 ug/l	below 0.1 ug/l

Please Note:

111 TCE is 1,1,1-Trichloroethane

12 TCE is 1,2-Trichloroethylene

PCE is 1,1,2,2-Tetrachloroethylene

1112 Tetra is 1,1,1,2-Tetrachloroethane

1122 Tetra is 1,1,2,2-Tetrachloroethane

AR000015

# AGES<sup>®</sup> LABORATORIES

1151 S. Tronper Road, Norristown, PA 19403 (215) 666-7404

Engineering Consultants - Analytical Services

## ANALYTICAL REPORT

December 8, 1982

Chemeclene  
258 N. Phoenixville Pike  
Malvern, PA 19355

Attn: King Graver

Re: Analysis of Waste Sample  
Submitted 11/16/82  
AGES Lab I.D. #821141

### Total (As received)

Cyanide	0.033 mg/kg
Phenol	44. mg/kg
Oil and Grease	101647. mg/kg
Sulfate (H2O Extractable)	4891. mg/kg
Total Solids	81.27%
Arsenic	11.87 mg/kg
Barium	489. mg/kg
Cadmium	36.46 mg/kg
Chromium	336. mg/kg
Lead	1752. mg/kg
Mercury	0.60 mg/kg
Selenium	4.93 mg/kg
Silver	3.80 mg/kg



Re: Analysis of Waste Sample  
Submitted 11/16/82  
AGES Lab I.D. #821141---

Volatile Organics:

The above sample was analyzed for volatile organics by the headspace method. The analysis was performed with a gas chromatograph equipped with a flame ionization detector. Sample components were identified by comparison of peak retention times with the standard compounds listed below. The results of the analysis are:

Methanol	4.4 mg/kg	1,2-Dichloroethane	336.0 mg/kg
Methylene Chloride	59.0 mg/kg	Trichloroethylene	750. mg/kg
Acetone	160. mg/kg	Tetrachloroethylene	1743. mg/kg
Chloroform	37.4 mg/kg	Toluene	578.4 mg/kg
Methylethyl Ketone	4353. mg/kg	Ethyl Benzene	45. mg/kg
Benzene	ND	Xylenes	147.7 mg/kg
Methylisobutyl Ketone	31.7 mg/kg		

ND = Not Detected.

13 additional major peaks detected.

Respectfully submitted,

AGES Laboratories

  
Jack Thorne  
Laboratory Manager

JT/bbk

AGES

AR000017



**QC Inc**

QUALITY CONTROL LABORATORY

1205 INDUSTRIAL HIGHWAY • P.O. BOX 514 • SOUTHAMPTON, PA 18966 • (215) 673-4900 • (215) 355-3900

Date Submitted: Sept. 16, 1982

Date Reported: Sept. 28, 1982

Marine Research Services Corporation  
258 North Phoenixville Pike  
Malvern, Pa. 19355

RECEIVED  
SEP 29 1982

Att: Mr. Lloyd Balderson

<u>Sample Identification</u>		<u>1,1,1 Trichloroethane ppb</u>	<u>TCE ppb</u>	<u>PCE ppb</u>
41	(QC #4983)	433.	566.	11.9
cc-3	4984	368.	1,045.	99.
9	4985	22.3	39.6	4.4
58-A	4986	< 2.	31.7	70.7
68-70	4987	0.8	4.6	0.8
5	4988	<0.5	2.0	<0.5
23	4989	<0.5	<0.5	0.6
BR	4900	<0.5	<0.5	<0.5
10	4991	6.9	20.2	0.8
15	4992	<0.5	4.6	0.9
10-A	4993	<0.5	<0.5	<0.5
65	4994	1.4	2.3	3.6
cc-2	4995	14.9	162.	18.0
cc-5	4996	123.	1,355.	118.
66	4997	<0.5	<0.5	<0.5

Q C Lab.

*Albert F. Zimmermann*

jsl  
Enclosures

AR000018



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RESULTS OF LABORATORY ANALYSIS - WATER SERVICE -TYPE 70 PAGE 1 QC0071

DATE RECD 6/16/83 PWS ID  
REPORT DATE - 7/01/83

DATE TESTED 6/28/83  
-BY-DEL

TESTED FOR  
08053 MARINE RESEARCH SERVICES

258 N PHOENIXVILLE PIKE  
MALVERN PA 19355

.....

SAMPLE--POINT-CHEMCLENE WL 8	--I--D NUMBER 6540	DATE SAMPLED	6/16/83
RESULTS	ANALYSIS	TIME	N/A
2.1	MCG/L 1,1,1 TRICHLOROETHANE		
1.1	MCG/L TRICHLOROETHYLENE /TCE/		
LT 0.5	MCG/L PERCHLOROETHYLENE /PCE/		

.....

SAMPLE--POINT-CHEMCLENE WL 33	--I--D NUMBER 6541	DATE SAMPLED	6/16/83
RESULTS	ANALYSIS	TIME	N/A
1.6	MCG/L 1,1,1 TRICHLOROETHANE		
0.9	MCG/L TRICHLOROETHYLENE /TCE/		
LT 0.5	MCG/L PERCHLOROETHYLENE /PCE/		

.....

SAMPLE--POINT-CHEMCLENE WL 36	--I--D NUMBER 6542	DATE SAMPLED	6/16/83
RESULTS	ANALYSIS	TIME	N/A
8.7	MCG/L 1,1,1 TRICHLOROETHANE		
5.6	MCG/L TRICHLOROETHYLENE /TCE/		
0.6	MCG/L PERCHLOROETHYLENE /PCE/		

.....

SAMPLE--POINT-CHEMCLENE WL 42	--I--D NUMBER 6543	DATE SAMPLED	6/16/83
RESULTS	ANALYSIS	TIME	N/A
0.7	MCG/L 1,1,1 TRICHLOROETHANE		
1.1	MCG/L TRICHLOROETHYLENE /TCE/		

AR000019



QC Inc  
QUALITY CONTROL LABORATORY

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ALB

RESULTS OF LABORATORY ANALYSIS -- WATER SERVICE --TYPE 70 PAGE 2 QC0071

TESTED FOR  
08053 MARINE RESEARCH SERVICES

LT 0.5 MCG/L PERCHLOROETHYLENE /PCE/

.....

SAMPLE---POINT-CHEMCLENE WL 43 --I-D NUMBER 6544	DATE SAMPLED	6/16/83
RESULTS	ANALYSIS	TIME
2.5	MCG/L 1,1,1 TRICHLOROETHANE	N/A
0.8	MCG/L TRICHLOROETHYLENE /TCE/	
LT 0.5	MCG/L PERCHLOROETHYLENE /PCE/	

ALL PROCEDURES CONFORM TO CURRENT E-F-A METHODOLOGY.

LT = LESS THAN  
GT = GREATER THAN  
EQ = EQUAL TO

QC INC

*Robert F. Zimmerman*  
.....

AR000020

*Lab*

United States Department of the Interior

GEOLOGICAL SURVEY

Water Resources Division  
35 Great Valley Parkway  
Great Valley Corporate Center  
Malvern, PA 19355

August 13, 1981

Vernon Calloway  
1 Hillbrook Circle  
Malvern, PA 19355

Dear Mr. Calloway:

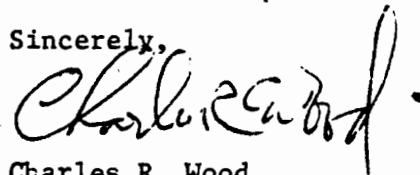
Thank you for allowing us to sample your well as part of the Chester County Ground Water Quality Monitoring Program. Enclosed is a copy of the laboratory report.

The quantity of dissolved substances in your well water are shown in quantities of milligrams per liter (MG/L) and micrograms per liter (UG/L). One milligram per liter of dissolved substance is equivalent to one part of the substance in one million parts of water. One microgram per liter of dissolved substance is equivalent to one part of the substance in one billion parts of water.

The water in your well contains 2 UG/L of phenols (EPA recommended limit is 1 UG/L), 20 UG/L of trichloroethylene-TCE- (EPA recommended limit is 4.5 UG/L, and 20 UG/L of 1,1,1 trichloroethylene (no recommended limit set by EPA). Phenols can cause objectionable odor in water. The limit for TCE is set by EPA because TCE is a suspected carcinogen.

We may wish to sample your well again sometime in the future as part of this continuing program. If you have any questions concerning the sampling procedure, please call me at 647-9008. If you have questions concerning health problems and contaminants, please call Philip Terry, Chester County Health Department at 431-6247.

Sincerely,



Charles R. Wood  
Subdistrict Chief

Enc. man.  
Enc.

AR000021

UNITED STATES DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY  
CENTRAL LABORATORY ATLANTA, GEORGIA

WATER QUALITY ANALYSIS  
LAB-ID # 170308 RECORD-# 60856

SAMPLE LOCATION: 2438  
STATION ID: 400331075342401 LAT.LONG.SEQ.: 400331 0753424 01  
DATE OF COLLECTION: BEGIN--810611 END-- TIME--1330  
STATE CODE: 42 COUNTY CODE: 029 PROJECT IDENTIFICATION: 444240300  
DATA TYPE: 2 SOURCE: GROUND WATER GEOLOGIC UNIT:  
COMMENTS: UNIQUE-#:  
OWNER VERNON CALLOWAY

ANALYZING AGENCY	80010	NITR DISS NH4 AS N MG/L	0.03
CARBON, ORGANIC, TOT MG/L	0.3	NITR. DIS NH4 AS NH4 MG/L	0.04
NITR DIS NO2 AS N MG/L	0.01	PH FIELD UNITS	7.4
NITR DIS NO3 AS N MG/L	2.6	SP. CONDUCTANCE FLD UMHOS	420
NITR DIS NO2+NO3 -N MG/L	2.6	WATER TEMPERATURE DEG C	13.0

CATIONS

(MG/L)

(MEQ/L)

TOTAL

ANIONS

(MG/L)

(MEQ/L)

NITR DIS NO2+N

2.6

TOTAL

0.186

AR000022

UNITED STATES DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY  
CENTRAL LABORATORY ATLANTA, GEORGIA

WATER QUALITY ANALYSIS  
LAR-ID # 169040 RECORD-# 60535

SAMPLE LOCATION: 2438  
STATION ID: 400331075342401 LAT.LONG.S.O.: 400331 0753424 01  
DATE OF COLLECTION: BEGIN--810611 END-- TIME--1330  
STATE CODE: 42 COUNTY CODE: 024 PROJECT IDENTIFICATION: 444240300  
DATA TYPE: 2 SOURCE: GROUND WATER GEOLOGIC UNIT:  
COMMENTS: UNIQUE-#: OWNER VERNON CALLOWAY

ALDRIN, TOT (WATER) UG/L	<	0.01	LINDANE, TOT (WATER) UG/L	<	0.01
ANALYZING AGENCY		80010	MANGANESE, DISSOLV. UG/L		1
ARSENIC, DISSOLVED UG/L		0	MERCURY, DISSOLVED UG/L		0.1
BENZENE, TOTAL UG/L		0.0	METALS DISS CHE-EXT		0
BROMOFORM, TOTAL UG/L		0.0	METHOXYCHLOR 1.(WAT) UG/L	<	0.01
CADMIUM, DIS. UG/L		3	METHYLBROMIDE, TOTAL UG/L		0.0
CARBON TETRA., TOT. UG/L		0.0	METHYLENE CHLORIDE, T UG/L		0.0
CHLORDANE, T (WATER) UG/L	<	0.1	MIREX, TOT. UG/L	<	0.01
CHLOROBENZENE, TOTAL UG/L		0.0	NICKEL, DIS. UG/L		3
CHLORODIBROMO., TOT. UG/L		0.0	PERTHANE, TOT. UG/L	<	0.01
CHLOROETHANE, TOTAL UG/L		0.0	PH FIELD UNITS		7.4
CHLOROFORM, TOTAL UG/L		0.0	PHENOLS, TOTAL UG/L		2
CHROMIUM, DISSOLVED UG/L		0	SP. CONDUCTANCE FLD UMHOS		420
CONFIRMATION ABOVE 2 UG/L		0	TETRACHLOROETHYLEN, T UG/L		0
CYANIDE, TOTAL MG/L	<	0.01	TOLUENE, TOTAL UG/L		0.0
DDD, TOTAL (WATER) UG/L	<	0.01	TOXAPHENE, T (WATER) UG/L	<	0.1
DDE, TOTAL (WATER) UG/L	<	0.01	TRICHLOROETHYLENE, T UG/L		20
DDT, TOTAL. (WATER) UG/L	<	0.01	TRICHLOROFLUOROMET, T UG/L		0.0
DICHLORODIBROMOMETHA, T UG/L		0.0	VINYL CHLORIDE, TOTA UG/L		0.0
DICHLORODIFLUOROME, T UG/L		0.0	WATER TEMPERATURE DEG C		13.0
DIELDKIN, T. (WATER) UG/L	<	0.01	1,1-DICHLOROETHYLEN, T UG/L		0.0
ENDOSULFAN I TOTAL UG/L	<	0.01	1,1-DICHLOROETHANE, T UG/L		0.0
ENDRIN, TOTAL (WATER) UG/L	<	0.01	1,1,1-TRICHLOROETH, T UG/L		20
ETHYLBENZENE, TOTAL UG/L		0.0	1,1,2-TRICHLOROETH, T UG/L		0.0
GROSS PCBS T (WATER) UG/L	<	0.1	1,1,2,2-TETRACHLORO, T UG/L		0.0
GROSS PCNS T (WATER) UG/L	<	0.1	1,2-DICHLOROETHANE, T UG/L		0.0
HEPT EPOX, T (WATER) UG/L	<	0.01	1,2-DICHLOROPROPAN, T UG/L		0.0
HEPTACHLOR T. (WATER) UG/L	<	0.01	1,3-DICHLOROPROPAN, T UG/L		0.0
IRON, DIS. UG/L	<	10	12TRANS-DICL-ETHYLENE UG/L		0.0
LEAD, DIS. UG/L		0	2-CL-ETHYL VINYLETHER UG/L		0.0

AR000023



QC Inc  
QUALITY CONTROL LABORATORY

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23 APR 83  
SAMAS

RESULTS OF LABORATORY ANALYSIS -- WATER SERVICE --TYPE 70 PAGE 1 QC0071

DATE RECD 4/21/83 PWS ID  
REPORT DATE - 5/13/83

DATE TESTED 4/21/83  
-BY-DEL

TESTED FOR  
08053 MARINE RESEARCH SERVICES

258 N PHOENIXVILLE PIKE  
MALVERN PA 19355

.....

SAMPLE---POINT--CC--2	RESULTS	ANALYSIS	--I-D NUMBER 6068	DATE SAMPLED	TIME
				4/21/83	N/A
	33.6	MCG/L 1,1,1 TRICHLOROETHANE			
	57.4	MCG/L TRICHLOROETHYLENE /TCE/			
	11.4	MCG/L PERCHLOROETHYLENE /PCE/			

.....

SAMPLE---POINT--CC--3	RESULTS	ANALYSIS	--I-D NUMBER 6069	DATE SAMPLED	TIME
				4/21/83	N/A
	1020.	MCG/L 1,1,1 TRICHLOROETHANE			
	3170.	MCG/L TRICHLOROETHYLENE /TCE/			
	188.	MCG/L PERCHLOROETHYLENE /PCE/			

.....

SAMPLE---POINT--CC--5	RESULTS	ANALYSIS	--I-D NUMBER 6070	DATE SAMPLED	TIME
				4/21/83	N/A
	1540.	MCG/L 1,1,1 TRICHLOROETHANE			
	9660.	MCG/L TRICHLOROETHYLENE /TCE/			
	418.	MCG/L PERCHLOROETHYLENE /PCE/			

.....

SAMPLE---POINT--10--A	RESULTS	ANALYSIS	--I-D NUMBER 6071	DATE SAMPLED	TIME
				4/21/83	N/A
	3.1	MCG/L 1,1,1 TRICHLOROETHANE			
	2.5	MCG/L TRICHLOROETHYLENE /TCE/			

AR000024





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RESULTS OF LABORATORY ANALYSIS - WATER SERVICE -TYPE 70 PAGE 2 QC0071

TESTED FOR  
08053 MARINE RESEARCH SERVICES

LT 0.5 MCG/L PERCHLOROETHYLENE /PCE/

.....

SAMPLE--POINT-10-B	RESULTS	ANALYSIS	--I-D NUMBER 6072	DATE SAMPLED	TIME
	3.2	MCG/L	1,1,1 TRICHLOROETHANE	4/21/83	N/A
	7.2	MCG/L	TRICHLOROETHYLENE /TCE/		
	0.5	MCG/L	PERCHLOROETHYLENE /PCE/		

.....

SAMPLE--POINT-41-A	RESULTS	ANALYSIS	--I-D NUMBER 6073	DATE SAMPLED	TIME
	255.	MCG/L	1,1,1 TRICHLOROETHANE	4/21/83	N/A
	LT 2.	MCG/L	TRICHLOROETHYLENE /TCE/		
	LT 0.5	MCG/L	PERCHLOROETHYLENE /PCE/		

.....

SAMPLE--POINT-41-B	RESULTS	ANALYSIS	--I-D NUMBER 6074	DATE SAMPLED	TIME
	595.	MCG/L	1,1,1 TRICHLOROETHANE	4/21/83	N/A
	869.	MCG/L	TRICHLOROETHYLENE /TCE/		
	33.2	MCG/L	PERCHLOROETHYLENE /PCE/		

.....

SAMPLE--POINT-51-A	RESULTS	ANALYSIS	--I-D NUMBER 6075	DATE SAMPLED	TIME
	5.0	MCG/L	1,1,1 TRICHLOROETHANE	4/21/83	N/A
	LT 0.5	MCG/L	TRICHLOROETHYLENE /TCE/		
	LT 0.5	MCG/L	PERCHLOROETHYLENE /PCE/		

AR000025



QC Inc  
QUALITY CONTROL LABORATORY

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RESULTS OF LABORATORY ANALYSIS - WATER SERVICE -TYPE 70 PAGE 3 QC0071

TESTED FOR  
08053 MARINE RESEARCH SERVICES

.....

SAMPLE---POINT-5	---I-D NUMBER 6076	DATE SAMPLED	4/21/83
RESULTS	ANALYSIS	TIME	N/A
0.7	MCG/L 1,1,1 TRICHLOROETHANE		
0.8	MCG/L TRICHLOROETHYLENE /TCE/		
LT 0.5	MCG/L PERCHLOROETHYLENE /PCE/		

.....

SAMPLE---POINT-15	---I-D NUMBER 6077	DATE SAMPLED	4/21/83
RESULTS	ANALYSIS	TIME	N/A
6.0	MCG/L 1,1,1 TRICHLOROETHANE		
3.7	MCG/L TRICHLOROETHYLENE /TCE/		
LT 0.5	MCG/L PERCHLOROETHYLENE /PCE/		

.....

SAMPLE---POINT-23	---I-D NUMBER 6078	DATE SAMPLED	4/21/83
RESULTS	ANALYSIS	TIME	N/A
LT 0.5	MCG/L 1,1,1 TRICHLOROETHANE		
LT 0.5	MCG/L TRICHLOROETHYLENE /TCE/		
LT 0.5	MCG/L PERCHLOROETHYLENE /PCE/		

.....

SAMPLE---POINT-65	---I-D NUMBER 6079	DATE SAMPLED	4/21/83
RESULTS	ANALYSIS	TIME	N/A
6.9	MCG/L 1,1,1 TRICHLOROETHANE		
3.2	MCG/L TRICHLOROETHYLENE /TCE/		
1.3	MCG/L PERCHLOROETHYLENE /PCE/		

ALL PROCEDURES CONFORM TO CURRENT E-P--A METHODOLOGY

LT = LESS THAN  
GT = GREATER THAN  
EQ = EQUAL TO

Q C INC .....

AR000026

## WOLF, BLOCK, SCHORR AND SOLIS-LOHEN

TWELFTH FLOOR PACKARD BUILDING  
S.E. CORNER 15TH AND CHESTNUT STREETS  
PHILADELPHIA, PA. 19102

(215) 977-2000  
TELECOPIER: LO 9-1089  
TWX 710-670-1927  
WOLSLORR PHA

FLORIDA OFFICE  
1888 PALM BEACH LAKES BOULEVARD  
P.O. BOX 027515  
WEST PALM BEACH, FLORIDA 33402  
(305) 471-3400  
TELECOPIER: (305) 684-4503

July 22, 1983

GERALD GORNISH  
MICHAEL J. HENRY  
ARTHUR A. ZATZ  
STEPHEN LEVIN  
ELIZABETH H. WA  
JOSEPH S. FINFELSTEIN  
BRUCE S. KATCHER  
THOMAS J. GALLAGHER III  
DEBRA LYNN STULSTEIN  
BERNARD LEE  
DAVID F. SIMON  
ARTHUR R. BLOCK  
NORMAN GOLDBERGER  
SANDRA A. BLOCH  
BURT M. RUDLIN  
JEFFREY L. BRAFF  
LESLIE E. KIVITZ  
DONALD M. MILLINGER  
MELVYN J. TARNOPOL  
MARK J. AMREIN  
KENNETH J. WARREN  
ROBERT B. MCKINSTRY, JR.  
BLAKE D. RUBIN  
PAMELA S. GOODWIN  
WENDY L. BROWN  
SUSAN L. EXTEIN  
GREGORY R. GREENFIELD  
ROBERT A. SILVERMAN  
ANDREW A. CHIRLS  
ANDREW J. DUBROFF  
SCOTT A. ISDANER  
M. ELLEN MOFFETT  
ABBE G. SHAPIRO  
NEIL S. WITKES

ALBERT C. BRASLOW  
JOHN S. ROBERTS, JR.  
MARC S. GOLD  
ROBERT L. BLACKSBERG  
ROBERTA D. VIEBENBERG  
MATTHEW H. KAMENT  
LAURA A. FRIEDMAN  
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ALAN I. GOLDBERG  
JEFFREY S. KATZ  
MARK L. ALDIMAN  
LESLIE D. BHAM  
BRYNN L. MAUSER  
LAWRENCE B. RYFF  
SHELLEY J. WINKLER  
ROBERT I. FRIEDMAN  
MARK R. ROSEN  
JEREMY T. ROSENBLUM  
CAROLE SHERMAN LEIS  
JERE G. THOMPSON  
GERALD A. CHAMBERLAIN  
DAVID GUTIN  
DALE I. MILESTONE  
WAYNE A. WEINER  
AMY L. BRANTZ  
RONALD L. GERN  
PATRICK MATUSKY  
STEPHEN A. PIET JR.  
JAMES R. WILLIAMS

\*ADMITTED TO FLORIDA BAR ONLY  
\*ADMITTED TO NEW YORK BAR ONLY

## COUNSEL:

ALFRED L. WOLF  
HELEN SPIGEL SAX  
NATHAN SILBERSTEIN

SAMUEL H. LEVY  
MORRIS L. FORER  
JOSEPH BRANDSCHAIN

James Heenehan, Esquire (3RC20)  
Office of Regional Counsel  
United States Environmental  
Protection Agency, Region III  
6th and Walnut Streets  
Philadelphia, PA 19106

Re: Chemclene Corporation

Dear Jim:

This is in response to your letter of July 12, 1983, and will confirm our telephone conversation of July 21, 1983. My client and I have reviewed your letter and the attachments which, as I told you, appear to raise more questions than they answer.

We were extremely disappointed to learn that Headquarters has not allowed the Regions to obtain agreements with private parties to perform site evaluations under Section 104 of CERCLA rather than pursuant to an Order under Section 106. This seemed to us to be a satisfactory way around EPA's unwritten policy of requiring companies to agree at the outset to blindly implement any clean-up recommendations proposed by EPA upon the conclusion of the site evaluation. As you might expect, and as you indicated was the case in all other negotiations you have had on this issue, Chemclene is not willing to conduct the site evaluation if they will be required to implement whatever clean-up actions EPA may later determine. In any event, you indicated that EPA had numerous studies to perform (you were unsure as to Chemclene's priority) and that Chemclene would be notified in advance of any work by EPA or its contractor in furtherance of the site evaluation task.

AR000027

W. B. S. & S-C.

James Heenehan, Esquire

Page Two

July 22, 1983

With regard to the on-going site clean-up activities, Chemcene is continuing to implement the program described at the May 31, meeting with the Department of Environmental Resources ("DER") which you and Pat McManus attended. The essence of this agreement is set out in a letter from DER to Chemcene, which has been refined somewhat through subsequent discussions. The commitment is to remove a trailer-load of material once every three weeks for disposal at a permitted hazardous waste facility. This work will continue until the materials are removed from the open pit at which time the closed pit will be tested and a clean-up schedule developed.

To the extent EPA is requesting Chemcene to enter into an agreement to confirm this clean-up program in lieu of a unilateral order issued by EPA under Section 106, we would consider doing so provided the terms of the agreement are acceptable and the factual findings are consistent with our understanding of the conditions at the site. Further, we reserve our commitment to enter an agreement if it will contain stipulated penalties since we do not yet know how and for what conduct such penalties will be assessed.

Finally, we understand that Chemcene has satisfied EPA with respect to its May 25 information request and that if additional information is needed, a second request will be sent.

We will await receipt of a draft agreement concerning the on-going clean-up work at the open pit. If you have any questions regarding this letter, please let me know.

Sincerely,



Marc E. Gold

For WOLF, BLOCK, SCHORR and SOLIS-COHEN

MEG/pd

cc: Patrick McManus ✓  
Lloyd Balderston

AR000028

# EARTH DATA INCORPORATED

ENVIRONMENTAL CONSULTANTS

ST. MICHAELS, MARYLAND AND WEST CHESTER, PENNSYLVANIA

NOT RECEIVED  
THE TOWNSHIP

SEP 23 1983

605 S. TALBOT STREET  
ST. MICHAELS, MARYLAND 21663

301-745-5046

September 12, 1983

Mr. Lloyd Balderston  
Chemclene Corporation  
Box 26, R. D. #1  
Malvern, Pennsylvania 19355

SUBJECT: Effectiveness of Pumping CC-3 to Create a Cone  
of Influence in the Vicinity of the Chemclene  
Corporation Plant.

Dear Mr. Balderston:

As discussed in our recent telephone conversation, we have completed our analysis to determine the effectiveness of pumping CC-3 to contain and remove groundwater contamination in the vicinity of your plant. Tests conducted during late June 1983, indicate that the pumping of Well CC-3 creates a cone of influence that is easily detected in Well CC-1, but which may not extend to CC-2 during all times of the year.

## Testing Procedure

In previous letters and meetings with DER, it was proposed to pump Well CC-3 to remove contaminated ground water from beneath the plant area. Pumping this well would also result in the establishment of a cone of influence under the plant that would collect contaminated ground water and prevent any future movement of contamination in a down gradient direction.

To determine the effectiveness of pumping Well CC-3 a test was conducted during late June 1983, using the monitoring network that has already been established in the vicinity of the plant. Continuous water-level recorders with very sensitive stage gears (1:1) were placed on Wells CC-1 and CC-2 (see attached Figure 4 for relative locations). The  $\frac{1}{4}$  H.P. submersible pump in Well CC-3 was turned on, allowed to pump for a period of 28 hours and then turned off. The hydrograph from the recorders on Wells CC-1 and CC-2 provided a continuous record of water-level response in each of the wells prior to, during and after the pumping period (copies of the actual hydrographs are attached). During the test, Well CC-3 was pumped at its maximum capacity of 5.5 gpm (7,920 gpd).

AR000029

The water pumped from the well was sprayed onto the roof of the Chemcene plant using a sprinkler system designed to maximize the volatilization and removal of chlorinated hydrocarbons. The results of the spraying appeared to be very effective. The method offers a simple, energy efficient and an easily maintained treatment system to assist with the clean-up of the aquifer under the Chemcene property. Water sprayed on the roof was routed to the western corner of the plant and discharged onto the ground in the vicinity of Well CC-2. While the discharge of this water did not affect the short-term test results, provisions should be made to route the water outside of the cone of influence once the system is in full time operation.

The effect of pumping CC-3 on Well CC-1 which is located approximately 100 feet away, was obvious. Water levels in Well CC-1 began to drop as soon as the well was turned on and began to recover as soon as it was turned off (see attached hydrograph). The effect on Well CC-2 (if any) was not nearly as obvious. A natural rise in water levels in Well CC-2 (which was taking place at the onset of pumping) may have been curtailed by the pumping Well CC-3, but the marked changes in level indicated on the hydrograph from Well CC-1 were not repeated on the hydrograph from Well CC-2.

### Conclusions

Pumping Well CC-3 at 5.5 gpm created a cone of influence that extended beyond Well CC-1 and possibly to Well CC-2. The size of the cone of influence in comparison to the pumping rate indicates that transmissivity in the overburden is low but not so low as to delay response times. Concentrations of volatile organics in the water discharged from Well CC-3 were relatively high indicating that the well is properly located. Well CC-3 is an ideal removal well. Pumpage from the well maximizes containment and removal while minimizing the impact on good quality water in the aquifer. In other words at a fairly low pumping rate the cone of influence around Well CC-3 is large enough to effectively contain and remove contaminated water without pumping a lot of uncontaminated water in the process.

Under continuous pumping conditions the cone of influence around Well CC-3 will grow until it is balanced by vertical leakage from recharge. If vertical leakage increases, then the cone will grow smaller. During periods of low recharge (the winter and summer months), Well CC-3 will be very effective containing and removing contaminants from the aquifer. During periods of normal recharge (late fall and during the spring), the well's effectiveness will decrease somewhat.

AR000030

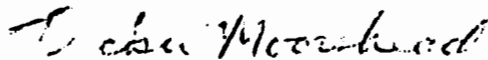
If the pump in Well CC-3 were to fail it can be replaced in a matter of hours. Failure of the well is unlikely since it has been screened and gravel packed in order to prevent collapse. The overall effectiveness of the removal system could be improved, however, by adding another well at a strategically selected location. A second well would insure that a large enough cone of influence can be maintained under any recharge condition and would provide operational flexibility so that the system could be managed and operated for maximum removal efficiency.

#### Recommendations

Based on the tests completed to date, it is our recommendation to place Well CC-3 into permanent and continuous service as a recovery well. The construction and operation of a second well should be considered after receiving DER's approval to proceed. The location and construction characteristics of the second well can be discussed at that time.

If you have any questions, please do not hesitate to contact us.

Very truly yours,



Tucker Moorshead  
Hydrogeologist

TM:pn - 65

cc: PA Office - Earth Data Inc.

Attachments

AR000031

## LOCATION MAPS

FIGURE 4

Well

*Heath*  
*Phonetic*Project: *Phonetic*State: *Minnesota*County: *Chaska*Township: *East Chaska*

Street:

Tract:

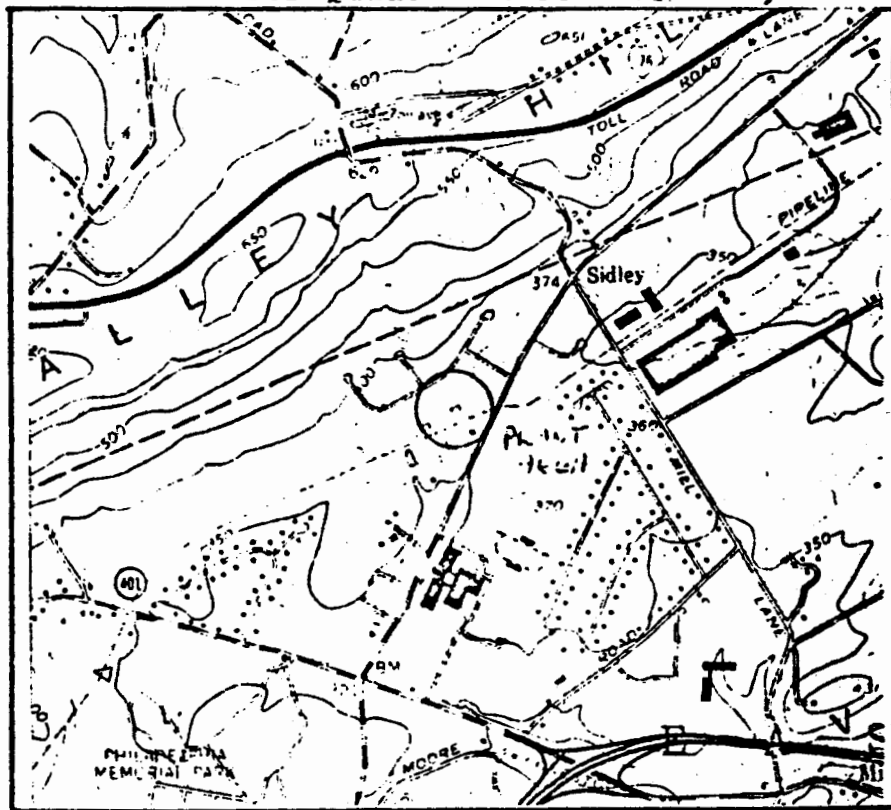
Topographic setting: *rolling*

Physiographic province:

Geologic formation: *glacial till*

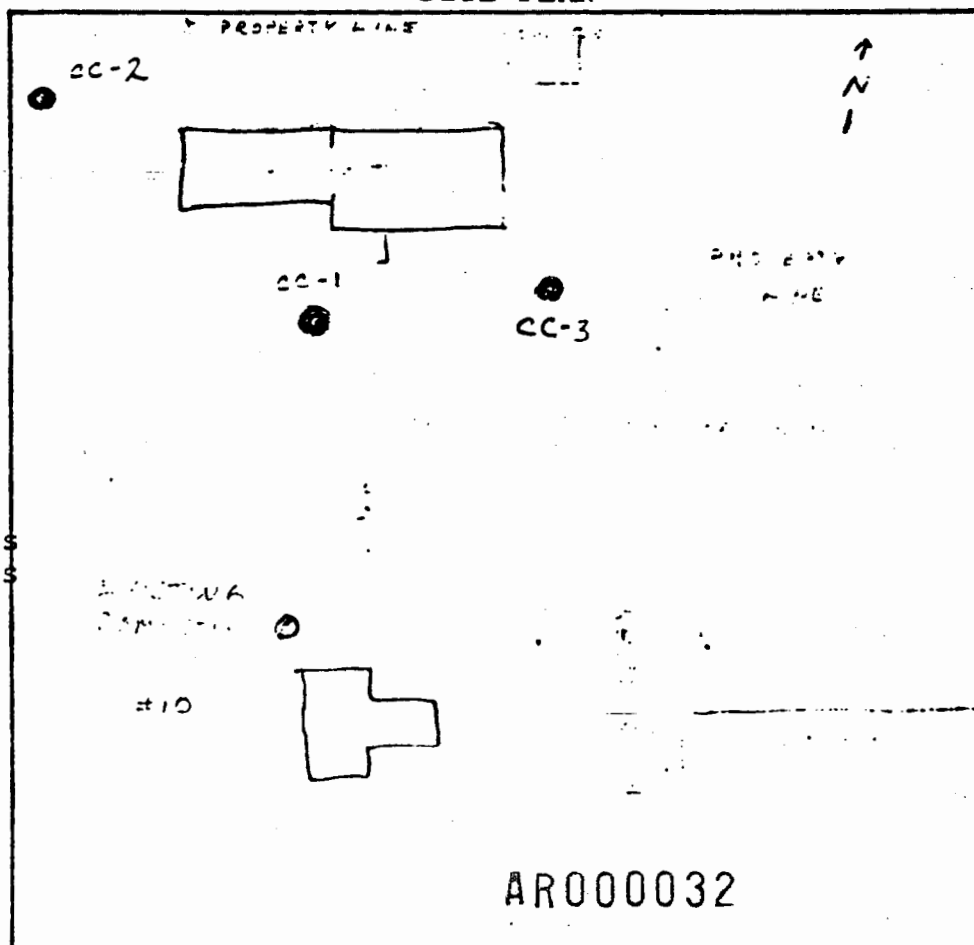
Longitude:

Latitude:

Elevation at surface: *~3*Flood elevation: *none*Flood potential: *none*Portion of USGS Quad: *14-14-100-7.5*Date: *whole record 1973*Scale: *1:2000'*Contour Int: *5'*

Locations also plotted:

## SITE PLAN



Access problems:

Site plan prepared by:

Identified on plot plan:

wells            roads  
springs        property l'ns  
pipelines      electric l'ns  
surface water bodies

Site/Well identified by:

Completed by:

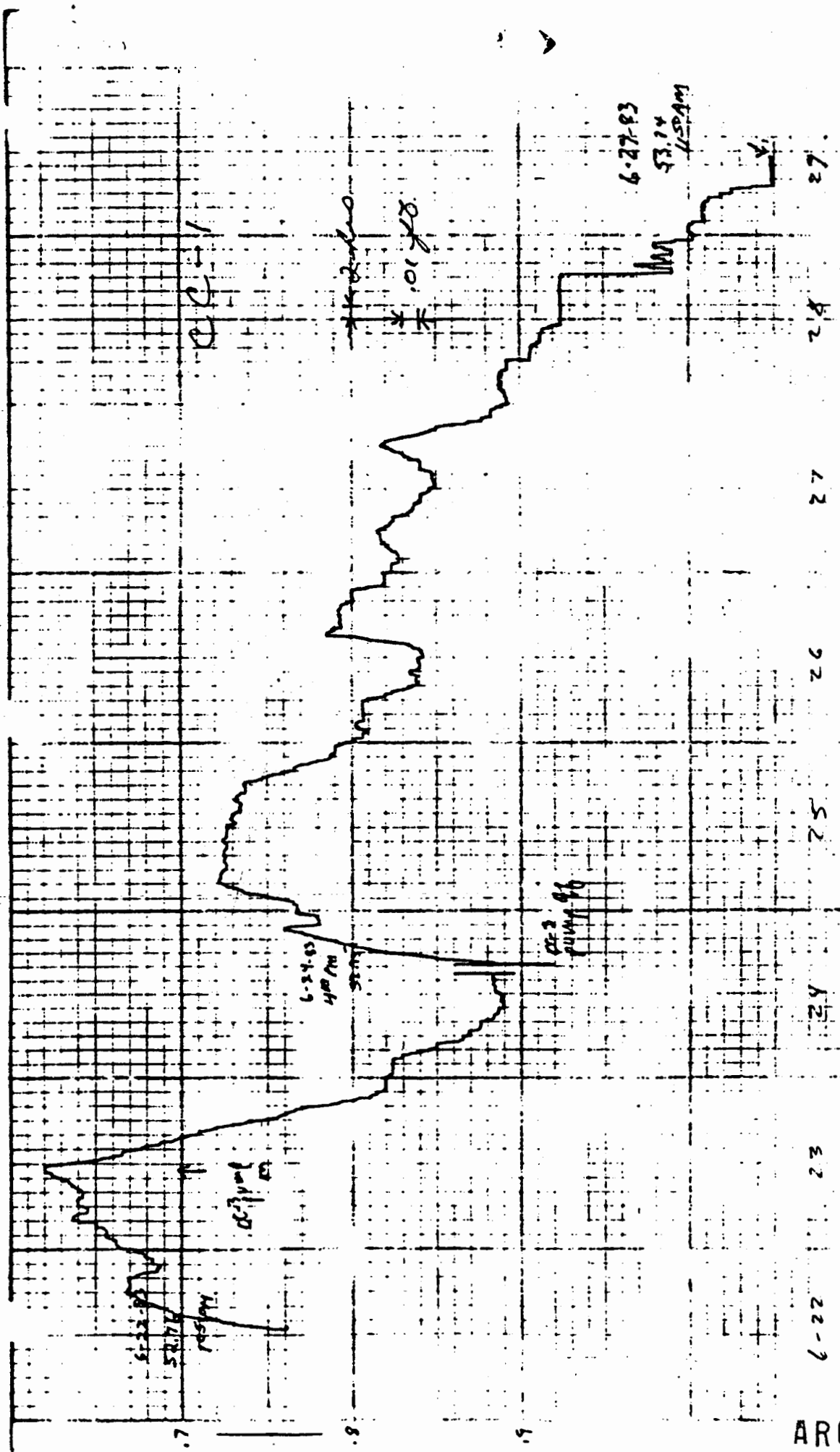
Date:

AR000032

Date:

Scale:





AR000033

CC-2

→ K-2 line

$\frac{1}{2} \cdot .01 \text{ ft}$

47.24  
47.24

cc-3  
pump off

cc-3  
pump on

| period  
of  
pumping

6-23  
47.56

29

28

27

26

25

24

23

22

6-29

48.33

12.30

CC-2  
1:1 8day

AR000034

Chem - Clene Meeting,  
September 9, 1983 9:00 AM

Chem - Clene File, Chester County

VICTOR JANOSIK  
Solid Waste Operations Supervisor

- Purposes of Meeting:
1. To discuss the cleanup of contaminated soils in the "open pit".
  2. To discuss groundwater recovery from the former disposal area.

Overview:

The drums of solvent wastes have been removed to proper disposal from the "open pit". Chemclene Corporation has decided that it would be to their advantage to excavate contaminated soils at the "open pit", and to back-fill the pit prior to proceeding with the clean-up of the "closed pit". Chemclene wanted some guidance concerning the methods that the Department would accept regarding sampling for contaminants in the "open pit" soils, and some indications of contaminant levels the Department would accept if left remaining in the soils encompassing the pit.

Points:

1. Chemclene informed the Department personnel present that the water remaining in the pit has been sent to Chem-clear (Chester) for analysis, and Chem-Clear has indicated that it can accept the waste.
2. Chemclene was informed that this office requires the sampling results from the wells as per our agreement. To date, no monitoring well results have been received by this office.
3. Chemclene was informed; that we must have a relatively recent analysis of monitoring well CC5 (downgradient from the pits) in order to determine an acceptable level of contamination for soils left in the pits.
4. The Department informed Chemclene that a method of sampling vertically through soils under the "open pit" must be proposed, and that analyses should be conducted for indicator parameters every 2 feet of depth.
5. Indicator parameters will be determined by DER personnel after studying the contamination levels of monitoring well CC5

AR000035

Chem - Clene Meeting  
September 9, 1983 9:00 AM  
- 2 -

6. The Department pointed out that the soils forming the sidewalls of the "open pit" must be analyzed, and that this might best be done using a backhoe to obtain samples. It was suggested that two backhoe trenches be dug, one deep, the other shallow. The deeper trench should be made from the "open pit" toward well CC5, and should be as deep as the bottom of the pit. The shallower trench should be dug from the pit toward well CC5 and should be 1/2 as deep as the "open pit". Both of these trenches should be sampled for indicator parameters every 5 lateral feet.
7. It was agreed that the proposal for the samplings of the "open pit" soils should be submitted for DER on or before September 16, 1983 for our review.
8. Chemclene was reminded that groundwater recovery would be required for the area of the pits. It was agreed that this proposal should be received by DER by December 31, 1983.

VJ:lp

Re ZLP68

AR000036

SEP 26 1983

## CHEMCLENE CORPORATION

MALVERN, PENNSYLVANIA 19355

(258 N. Phoenixville Pike)

21 September 1983

Mr. Victor J. Janosik  
Pa. Department of Environmental Resources  
1875 New Hope Street  
Norristown, PA 19401

Re: Clean-up of former  
disposal area.

Dear Mr. Janosik:

This letter is a progress report concerning those items discussed in the 31 May 1983 meeting between the Department and Chemclene Corporation; it also clarifies subsequent conversations and meetings and proposes future actions.

Ground water analysis now includes analysis for trichloroethylene, 1,1,1-trichloroethane and tetrachloroethylene. This was actually begun as standard procedure before the May Meeting. It was Chemclene's understanding that the wells outlined in the monitoring program by Tucker Moorshead (Earth Data, Inc.) were to be sampled every six months. This understanding was confirmed in your letter of 10 May 1983. However, in our meeting of 9 September 1983 you stated that item no. 2 in your letter (10 May) was in error and that a semi-annual program would be considered if levels were not sufficiently above background. It is now our understanding that the Department would like a quarterly sampling program. Chemclene will abide by this request. Enclosed are the results of past well sampling done on 15 September 1982 and 20 April 1983. In the future well nos. 17, 19, 56 or 57 will be included in the sampling program.

In June of this year Chemclene ran its experimental roof water treatment system for a period of one week. Water samples were taken for analysis before and after treatment, once a day. On the second day following the last day of sampling all the samples were taken to an outside laboratory for analysis. These results are enclosed. Concurrently with the experimental run of this treatment system, Earth Data, Inc. measured water levels in nearby wells. Last week we received these results.

AR000037

A copy of this report is enclosed. We await to hear from the Department as to the Emergency Discharge Permit.

As of this date Chemclene has completed the removal and disposal of the waste material from the open pit. This phase was scheduled to be completed on 31 October 1983. (It should be mentioned, for the record, that item no. 4 of your letter dated 13 June 1983 was not totally accurate. As you and I discussed on the phone on 5 July 1983, Chemclene agreed to remove and dispose of one dump trailer full of solidified waste material from the open pit every three weeks. We made the assumption that each solidified load would represent 80 drums of waste). On 9 September 1983 Chemclene met with you and other representatives of the Department to discuss the removal of the soil from the open pit now rather than after the removal of the wastes from the closed pit. We wish to address this phase now as the water table is at an appropriate level, more contaminants will be removed from the environment earlier and the ground space is needed in order that the closed pit may be delt with more efficiently.

After our discussions with the Department and subsequent discussions with our consultants and advisors, Chemclene proposes the following:

1. Any remaining free water in the pit will be pumped out and transported to Chem-Clear in Chester, PA for disposal. Chem-Clear has agreed to accept this material baised on a sample of the pit water.
2. After a couple of days of drying time, a bulldozer equipped with a bucket-blade will be used to remove any remaining debris. Any semi-solid debris will be solidified as before (as approved by the Department) and placed in our sealed dump trailer for disposal at Fondessy. Solid debris will be placed in plastic on top of the ground to the side of the pit and covered with plastic to avoid rain leaching.
3. Soil will then be removed from the bottom and the sides of the pit until clean, good smelling soil is reached. We request that a representative of the Department be present during this step. This material will then be delt with as was the solid debris in no. 2 above.
4. All solid material will be disposed of at Fondessy at the rate of one dump trailer per week until gone.
5. The open pit will then be filled with soil from the pile at the north end of said pit.

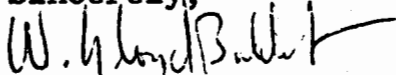
We feel this proceedure will remove the grossly contaminated

AR000038

soil. Any concentrations below this gross contamination will be dealt with by the ground water recovery project. The removal of all soil with contamination equal to or greater than that found in the water of well no. CC-5 (as was suggested in our last meeting) is not practical. However, the ground water recovery project will remove the majority of the contamination while at the same time prevent further spread of the plume. We will have our proposal for ground water recovery to you on or before 31 December 1983.

We feel that, in general, we have made good progress in several areas and excellent progress with the open pit in particular. We would hope that we could proceed quickly with the final phase of the open pit clean-up. Please let us know at your earliest convenience if this soil removal proposal is acceptable to the Department.

Sincerely,

  
W. Lloyd Balderston

Enclosures.

cc: Tucker Moorshead  
Marc Gold

AR000039

Department of Environmental Resources

1875 New Hope Street  
Norristown, PA 19401  
215 631-2420

October 28, 1983

Mr. W. Lloyd Balderston  
Chemclene Corporation  
258 North Phoenixville Pike  
Malvern, PA 19355

Re: Open pit clean-up

Dear Mr. Balderston:

This office has reviewed the information and proposal dated September 21, 1983, concerning removal of contaminated liquid and soils from the "open pit" area. This proposal is subsequent to a meeting held among Chemclene and DER representatives, September 9, 1983. Page 2 of your letter delineated five points of procedure. I will comment on these items in the order in which they appear in your letter.

Item #1 notes that the remaining water in the pit can be accepted by Chem-Clear in Chester, Pennsylvania. Chem-Clear in Chester has no facilities for treating waste waters containing halogenated solvents. A check of the Chem-Clear facility, by this office, found that no volatile organic analysis had been done on the sample submitted. If this waste is to be treated by Chem-Clear or any other treatment facility, that facility must be capable of such treatment. A sample of the waste water in the pit has been taken by Frank Holmes of this office for analysis. Until shown to be otherwise, this office must assume that the water remaining in the open pit is contaminated with halogenated organic solvents.

Item #2 suggests that solid debris from the open pit excavation will be placed on plastic and covered with plastic. This Department does not consider this to be acceptable. Materials removed should be placed in proper disposal containers and removed from the site for disposal. Placing contaminated materials on plastic for future removal allows a greater possibility of air and water run-off contamination.

Item #3 notes that soils in the open pit will be removed until "clean, good smelling soil is reached." At the September 9, 1983 meeting, the Department proposed that boring and trenching, combined with sampling, can be done to determine where soil excavations can be terminated. However, your proposal will be considered adequate. This might involve an analysis of soils remaining after excavation to determine the level of contamination remaining. Frank Holmes of this office should be advised as to when this excavation will take place.

AR000040



Mr. W. Lloyd Balderston

October 28, 1983

-2-

Item #4 suggests that all solid material will be disposed of at the rate of one dump trailer per week. The Department contends that all wastes excavated from the site should be placed in proper disposal containers and removed for disposal when each container is filled.

Item #5 is acceptable as written.

If you have any comments on these matters, please contact this office.

Sincerely,

Victor J. Janosik

Solid Waste Operations Supervisor

cc: Bruce D. Beitler

Victor Janosik

Frank Holmes

Water Quality Management, Marilyn Shup

Tony Bartolomeo, U.S. EPA

File, Chemclene Corporation, Chester County

Re FR2-70

AR000041

Department of Environmental Resources

1875 New Hope Street  
Norristown, PA 19401  
215 270-1920

December 30, 1983

Mr. W. Lloyd Balderston, President  
Chemclene Corporation  
258 North Phoenixville Pike  
Malvern, PA 19355

Re: Meeting of December 22, 1983

Dear Mr. Balderston:

This letter reiterates points discussed and agreements established during a meeting held in this office December 22, 1983 and attended by yourself and Mr. King Graver representing Chemclene Corporation, and by myself and Frank Holmes representing PA Department of Environmental Resources. The purposes of the meeting were to discuss the status of the cleanup activities and to establish dates by which certain aspects of the cleanup will be completed. The various aspects of the cleanup are herein addressed separately as follows:

"Open Pit"

Drums containing wastes have been removed and their various wastes mixed with kiln dust and taken to the Fondessy landfill in Ohio. The pit is now filling with water and is estimated to be one-half full. Excavation of the sidewalls and bottom of the pit requires that a large piece of excavations equipment be used. However, weather conditions have been unfavorable for the mobility of heavy equipment. Chemclene has contacted a contractor for the use of the necessary equipment and will contact others to assure that the necessary equipment will be available when the opportunity for excavation arises. In any event, excavation and removal of the soils lining the pit will be completed on or before June 15, 1984. Contaminated water within the pit will be removed prior to excavation and will be taken to the Deftest Facility in the State of Delaware.

"Closed Pit"

Fifty drums have been excavated from the "Closed Pit" and a composite sample has been analysed for PCB's. The analysis showed 8.3 ppm PCB in the composite sample. The amount of PCB contamination does not disqualify this waste from disposal at Fondessy landfill. These drums have not, however, been mixed with kiln dust and have not been removed for disposal. Chemclene Corporation will sample groups of 10 to 13 drums in composite samplings and will handle those groups containing greater than 50 ppm PCB as PCB wastes for disposal purposes. These PCB wastes will be contained, stored, and otherwise handled as necessary for proper disposal.

AR000042

Chemclene Corporation has agreed to remove three truckloads (consisting of approximately two roll-off containers as per previous removals) of kiln dust/sludge mixture for proper disposal before April 15, 1984. This waste removal is independent of any excavations which might occur in the "Open Pit" and which also will require proper disposal of waste soil.

#### Groundwater

The groundwater recovery proposal for the disposal area is due December 31, 1983. Chemclene Corporation has indicated that, due to delays beyond its control, the proposal will probably, be submitted during the first week of January 1984. Chemclene Corporation has indicated that all downgradient water supply wells showing contamination attributable to the site have had their filters replaced during October 1983. These filters are replaced every year or 15 months. No contamination "breakouts" have occurred to date. Quarterly sampling for contaminant concentrations prior to filtering is being done on selected filtered home water supply systems.

#### Meeting

A meeting to discuss future actions regarding waste cleanup at the site has been scheduled for Monday, April 16, 1984 at 9:00 AM in this office.

The Department will continue to monitor the cleanup activities on the Chemclene property.

If you desire to discuss any matters pertaining to the cleanup, please contact me or Frank Holmes at 270-1920.

Sincerely,

VICTOR J. JANOSIK  
Solid Waste Operations Supervisor

cc: B. Beitler  
T. Bartolomeo ✓  
F. Holmes  
Re 30 3W1

AR000043



Mr. King Graver  
January 5, 1984  
- 2 -

If you have any questions, please feel free to contact the Department.

Very truly yours,

*Joseph A. Feola*

JOSEPH A. FEOLA  
Regional Water Quality Manager

cc: Solid Waste Management  
James D. Morris, Office of Chief Counsel  
Chester County Health Department  
Marilyn Shup  
Re 30 4W 339.27

AR000045

CHEMCLENE CORPORATION

MALVERN, PENNSYLVANIA 19355  
258 N. Phoenixville Pike

January 30, 1984

Mr. Joseph Feola  
D.E.R.  
1875 New Hope St.  
Norristown, PA 19401

Dear Mr. Feola,

This is to acknowledge receipt of your letter of January 5, 1984 and to confirm our phone conversation of January 19, 1984.

As I explained, your letter was misplaced and not opened until Jan. 16. This is obviously after your January 13 date for submission of a design and implementation schedule for a modified aeration system.

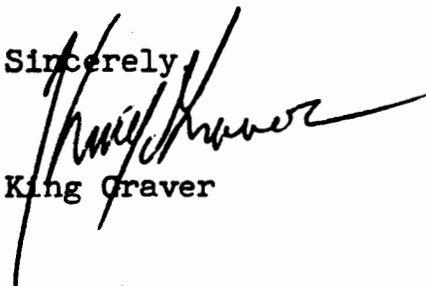
As agreed, the above mentioned plan will be submitted to your office by February 20, 1984.

I also understand that D.E.R. has decided that 30 ppb is acceptable for TCE levels in the system discharge water. We now have for the first time, a design goal which will be helpful to say the least.

I further understand that the specific method we use to reach this goal is not of specific concern to D.E.R. as long as we meet applicable regulations and the system is operable 24 hours a day, year round.

If the above is not your understanding, please let me know.

Sincerely,



King Graver

AR000046

DER-RECEIVED  
NORRISTOWN

PHONE: (215) 644-2986

FEB 8 1984

**CHEMCLENE CORPORATION.**

MALVERN, PENNSYLVANIA 19355

(258 N. Phoenixville Pike)

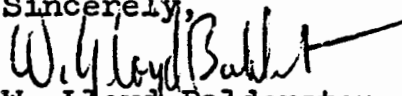
6 February 1984

Mr. Victor Janosik  
PA Department of Environmental Resources  
1875 New Hope Street  
Norrstown, PA 19401

Dear Mr. Janosik:

Enclosed please find the proposed Ground Water Retrieval Plan for the Former Disposal Area. On behalf of Chemclene's consultant, Earth Data, Inc., I apologise for the late submittal of this proposal.

I would greatly appreciate it if you could tell me who will be chiefly responsible for the review and approval/disapproval of this proposal so that we may follow the review process and perhaps explain in more detail some areas of the proposal that might need clarification

Sincerely,  
  
W. Lloyd Balderston

Enclosure.

cc: Marc Gold

AR000047

DERIVED  
NORRISTOWN

FEB 8 1984

GROUND-WATER RETRIEVAL PLAN  
FOR THE  
FORMER DISPOSAL AREA

Work Plan for Clean-up  
and  
Future Monitoring

JANUARY 1984

Prepared for the

CHEMCLENE CORPORATION  
258 N. Phoenixville Pike  
Malvern, Pennsylvania 19355

Prepared by

EARTH DATA INCORPORATED  
605 S. Talbot Street  
St. Michaels, Maryland 21663  
301-745-5046

and

34 E. Market Street  
West Chester, Pennsylvania 19380  
215-436-4773

AR000048



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AR000051

## 1.0 INTRODUCTION

### 1.1 Background

Chemclene Corporation sells and recycles industrial cleaning solvents. For over 30 years, they have maintained a successful and innovative recycling facility at their present location in Malvern, Pennsylvania. Products handled by Chemclene include the industrial cleaning solvents, trichloroethylene (TCE), 1,1,1,-trichloroethane, perchloroethylene (PCE, also called tetrachloroethylene) and methylene chloride. Chemclene employs a distillation process that results in (1) the removal of impurities from a particular solvent so that it can be returned to a customer for reuse and (2) the formation of small to moderate quantities of sludge which is sent via a licensed transporter to an approved disposal facility.

In 1980, Chemclene undertook a voluntary investigation of ground-water quality in the vicinity of their Malvern facility to determine if their operation had had any affect on the local ground-water system. As a result of that investigation, two source areas of potential ground-water contamination were identified. These areas were:

1. The plant area on the east side of the property (see Figure 1).
2. The former disposal area to the west of the plant area (see Figure 1).

In voluntary cooperation with the Pennsylvania Department of Environmental Resources (DER) and the U.S. Environmental Protection Agency (EPA), Chemclene Corporation

AR000052

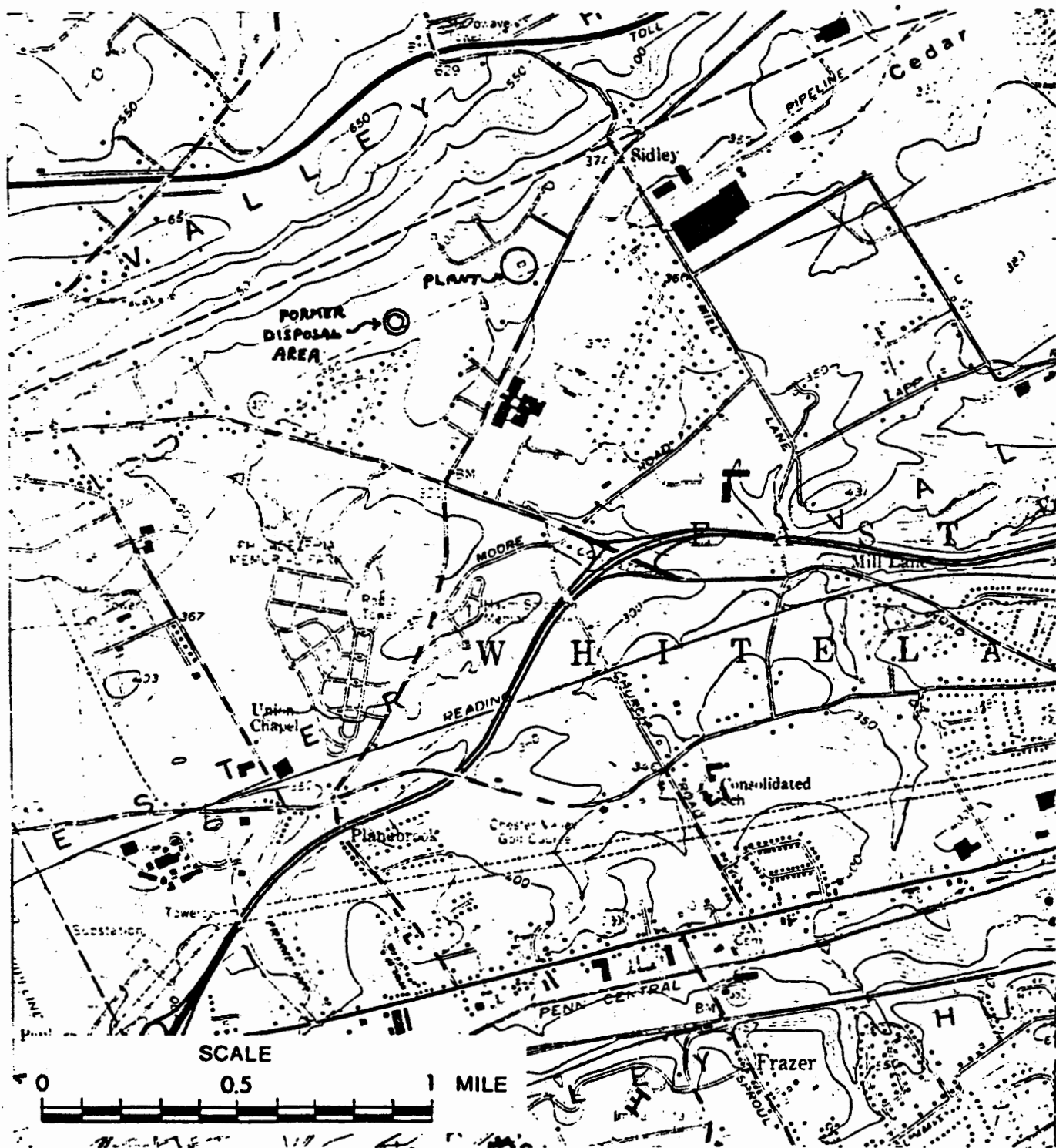


Figure 1 - Location of Chemcene Corporation former disposal area and plant, Malvern 7 1/2 min. quadrangle.

AR000053

is taking all necessary actions toward the clean-up of the existing potential sources of contamination. Along with many other positive activities, the company is directing its efforts toward the removal of the entire contents of the former disposal area.

As the continued removal of drums and contaminated soil enters a second phase, DER has requested that a Ground-Water Retrieval Plan be developed for that area. The Retrieval Plan for the former disposal area has been developed by Earth Data Incorporated and is presented in this report.

#### 1.2 Site Location

Chemclene Corporation is located on over 100 acres of mostly wooded property situated on the southeast slope of Bacton Hill in East Whiteland Township, Chester County, Pennsylvania (see Figure 1). The former disposal area is approximately 2,500 feet west of the plant area along the base of Bacton Hill. Access to the former disposal area is along an abandoned railroad right-of-way which crosses Phoenixville Pike near the main driveway leading to the Chemclene plant. Parallel and to the north of the railroad right-of-way is the right-of-way of the Transcontinental Gas Pipe Line and the site is now enclosed in a locked, chain link fence.

#### 1.3 Hydrogeology

The hydrogeologic setting of the Chemclene property is described in detail in the report: "Ground-Water Quality

AR000054

Investigation for the Chemclene Corporation - Problem Definition with Recommendations for Clean-up", November 1981, by Moorshead-Siddiqui and Associates (now Earth Data Incorporated). Specific information concerning the former disposal area contained in that previous report is summarized below.

#### 1.3.1 Topography and Drainage

The former disposal area is situated at the base of Bacton Hill. Surface drainage is toward the south with overland flow eventually reaching Valley Creek. The former disposal area is approximately 1,700 feet from Valley Creek at its closest point.

#### 1.3.2 Geology

The former disposal area is underlain by the Ledger Formation, a light gray dolomite. Upslope from the site and to the north, the area is underlain by the much more resistant quartzite and quartz schist of the Chickies Formation. The resistant rock underlies most of the ridge of Bacton Hill. A fault contact separates the Chickies and Ledger Formations. The overburden thickness in the area varies from a few feet near bedrock exposures to probably depths of between 100 and 150 feet at the centers of incipient sinkholes (in the carbonate rocks). Overburden materials

consist mostly of clay and silt with some residual rock fragments and sand lenses.

### 1.3.3 Ground-Water Flow

While topographic drainage patterns in the area would seem to indicate all subsurface flow should drain towards the south and Valley Creek, water-level and geochemical data tends to indicate that flow is toward the northeast. Ground-water flow probably occurs most readily parallel to the major fault that extends along the base of Bacton Hill with gradients established by major ground-water withdrawals in the nearby valley.

Ground water at the site of the former disposal area occurs within the overburden under water-table conditions and within the bedrock under confined and semi-confined conditions. Depths to the water table in the area vary between 30 and 60 feet depending on a number of factors. Water levels fluctuate seasonally and from year to year in response to ground-water recharge and ground-water discharge to streams, quarries and wells. Water-level declines in the area have caused some springs to dry up and some shallow wells to be adversely affected.



#### 1.3.4 Ground-Water Contaminant Migration

In the previously referenced report, a contour map of projected ground-water contaminant concentration was presented for the Chemcene property including the former disposal area. The map indicates that contaminant migration is to the northeast along the fault in the direction of the Chemcene plant area. The zone of highest concentration is projected to encompass a relatively small area close to the site. Most of the projected area of contaminant flow is immediately northeast of the former disposal area. Additional monitoring wells are proposed in the Retrieval Plan to further delineate the contamination plume and to insure that withdrawals create a large enough cone of influence to effectively encompass the disposal area.

## 2.0 GROUND-WATER RETRIEVAL PROGRAM

### 2.1 Purpose

The purpose of the ground-water retrieval program is two-fold: 1) to halt any further spread of potential ground-water contamination and, 2) to remove and treat ground water so that in time the degree of contamination will diminish within the affected area.

*possible spread of contaminated gas?*

Any further spread of contaminants will be halted by creating a ground-water cone of influence in the area of the former disposal site by pumping a recovery well located adjacent to the site. Because the site is an old one, it is felt that a more or less equilibrium condition now exists. However, changes in recharge amounts or a decrease in pumpage in the valley could cause changes in the present ground-water flow patterns. If this occurs, an in-place functioning retrieval program could help to prevent the spread of contamination into new areas. The extent of the cone of influence necessary to contain the site will be determined through the monitoring of ground-water levels in nearby observation wells. These wells would be installed as part of the retrieval program.

The removal of contaminated ground water will be accomplished through the pumping of the same well used to create the cone of influence under the former disposal area. Treatment of the volatile organic compounds in the ground water pumped from this well will consist of aeration by spraying in the wooded area adjacent to the site.

## 2.2 Recovery Well

A six inch diameter, open borehole recovery well will be constructed immediately south of the two pits within the fenced in area (see Figure 1). The well will be cased and grouted into bedrock. The depth of the recovery well will be determined in the field because it is dependent, obviously, upon subsurface conditions. It is expected that the well may have to be drilled to a depth of approximately 120 feet in order to encounter sufficient water-producing zones. The yield of the well will have to be sufficient to create a large enough cone of influence to encompass the site. In the event that a sufficient yield is not encountered, an existing well (CC-5) will be used as the recovery well. Well CC-5 is located approximately 100 feet south of the former disposal area and based on previous testing has an estimated yield in excess of 30 gpm.

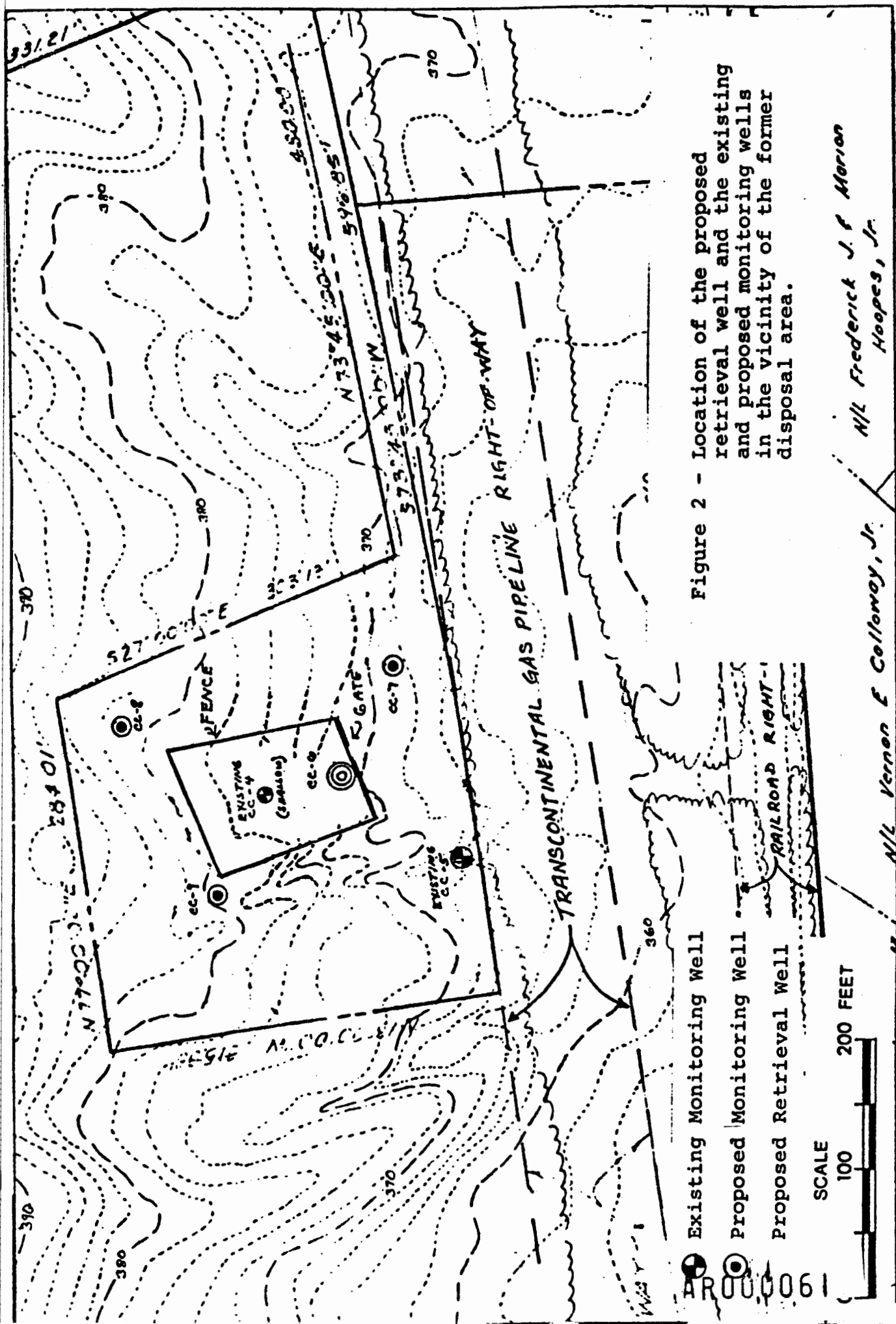
Pumping equipment for the recovery well would consist of an electric submersible pump of proper size and setting with sufficient controls to regulate the flow rate. Actual withdrawal from the retrieval well will depend upon many factors including well yield, drawdown effects in the immediate area and treatment system characteristics. It is planned that once the system is installed and is fully operational, the recovery well will be pumped on a continuous basis.

### 2.3 Monitoring Wells

It is proposed that additional monitoring wells be installed at selected locations around the former disposal area. These wells would serve as ground-water level measurement points for the determination of the size and configuration of the cone of influence that will exist around the recovery well. These wells are also intended to serve as water quality monitoring points to access pre-retrieval conditions and to monitor the effectiveness of the ground-water contaminant retrieval program.

A system of four monitoring wells is proposed. One of these will be existing Well CC-5. The tentative monitoring well locations are shown in Figure 2. The locations of the monitoring wells are also selected to be able to serve as observation points in the event that Well CC-5 is used as the recovery well.

The monitoring wells will be drilled using air rotary equipment. All wells will be six inches in diameter and have either steel or thermoplastic well casing. The wells will be drilled deep enough to encounter sufficient water producing zones from which representative water-level measurements and water quality samples can be taken. In the event that subsurface conditions are not suitable for open borehole construction, (i.e., collapse of borehole) an individual well could be constructed of four-inch I.D. PVC casing with screened intervals set at appropriate depths to intercept water-producing zones. The annular space of these wells



would be gravel packed with clean sand and properly grouted to prevent leakage. Protective steel casing will be cemented at the surface and all monitoring wells will have locking caps installed to prohibit unauthorized access to the wells. All monitoring wells will be developed as necessary to allow for the free movement of ground water into the well from the surrounding formation.

### 3.0 GROUND-WATER TREATMENT AND DISPOSAL

#### 3.1 Treatment Methods

There are many methods that can be used to remove volatile organic compounds from water so that the water may be either used or disposed of safely. These methods include spray irrigation, air stripping, activated charcoal adsorption and in-well airlift treatment. Selection of the treatment method to be employed at the former disposal area is dependent upon the effectiveness of the proposed method in relation to actual site conditions and concentrations. A preliminary investigation of loading rates eliminates the use of activated charcoal adsorption. Research into in-situ airlift treatment techniques is underway at a water authority in central Montgomery County. This technique may be a viable option once the results of the research study are final. Mechanical stripping towers are highly effective in removing contaminants but in general take a long time to design and build and do not allow for much operational flexibility once they are installed. Spray irrigation is a relatively trouble-free and practical technique, but comprehensive data on the total effectiveness of such systems is not readily available.

Treatment using spray irrigation does have an advantage over other methods in that it can be employed rather quickly and simply and does not result in a depletion of the ground-water resource. For spray irrigation to be used successfully, a sufficient amount of land area is necessary.

AR000063

In other places that spray irrigation has been used to remove VOC's, land availability has been a problem and as a result effectiveness curtailed.

Methods other than spray irrigation must incorporate some method to dispose of the treated water. These methods may consist of surface discharge to local swales and drainage ways, injection through recharge wells or incurring the additional cost of a spray system. Since removal of volatile organic compounds occurs both in the atmosphere (aeration) and in the soil (biodegradation), a nearly fail-safe system results when spray irrigation is used.

As a result of the above considerations, it is planned that a spray irrigation treatment system will be employed at the former disposal area. Such a system will allow for the quickest installation and start-up of the retrieval program. The opportunity will then exist to collect firm data to determine the actual treatment efficiency of the system (both in the air and in the soil) and the yield necessary to sustain a cone of influence of sufficient size. Time will also be made available to investigate another alternative treatment system, if the spray irrigation system proves to be less efficient than expected.

### 3.2 Aerated Spray Treatment

It is planned that all contaminated ground water pumped from the recovery well will be treated by the use of an aerated spray irrigation system. Special, misting type spray nozzles will be used to maximize volatilization. The system



will be operated throughout the year regardless of ambient air temperature. Flow and spray nozzle design will be adjusted through experimentation until the most efficient combination is found. The system will be located to allow for the infiltration of all spray-treated water (minus evaporative losses) in a down plume direction. This will help to further reduce concentrations in the ground water. Overland runoff will be minimized through proper design and management of the spray irrigation system. Wooded areas will be used to minimize ice build-up in the winter months.

The spray system is to be east of the former disposal site. Site layout will be dependent upon field conditions and a better definition of the contamination plume. Actual spray system design, (i.e., overall area, nozzle flow, nozzle spacing, total system flow, etc.) is also dependent upon the withdrawal from the recovery well and aquifer characteristics. At an application rate of between 50 and 100 inches per year, the approximate area of the spray irrigation system is estimated to be in the range of 2 to 4 acres.

Once all materials are removed and the former disposal area is filled with clean soil, part of the spray irrigation system may be moved to include that area. The infiltration of treated water could enhance the flushing of any remaining contaminants from the aquifer below the excavated portion of the site. Such recycling of water would eventually bring concentrations back to near zero.

AR000065

### 3.3 Investigation of Alternative Treatment Methods:

Alternative treatment methods will also be investigated along with the efficiency of the operating spray irrigation system. During the first six months that the spray system is in operation, water quality samples will be collected at the following locations:

1. Discharge of the retrieval well.
2. Portable sampling "raingage".
3. Pan lysimeters at depths of .5 and 2 feet.
4. Monitoring well in the plume and spray area.

The samples will be analyzed for the volatile organic parameters TCE and PCE. Analyses will be performed at the Chemclene laboratory using their gas chromatograph. Duplicate samples will be sent periodically to an approved laboratory for confirmation of results. The spray sampling schedule will be coordinated to assess the efficiency of treatment over a wide range of climatological conditions. These conditions will include factors such as time of day, air temperature, humidity, wind conditions and precipitation events. Following the six month data collection period, an assessment of treatment efficiency will be made and a report presented to DER. If it is found that the spray irrigation treatment system is sufficiently effective in removing contaminants, then an application will be made to DER for a longer term discharge permit.

The alternative treatment methods that will be investigated during the six month experimental period will

include a mechanical stripper and an in-well airlift treatment technique. Investigation will be made into design, effectiveness of contaminant removal and cost of construction and operation. Approval from DER will be sought prior to the construction of any facility that would replace the spray irrigation system.

AR000067

#### 4.0 REQUIRED PERMITS

##### 4.1 DRBC - Ground-Water Protected Area Withdrawal Permit

The ground-water retrieval well at the former disposal area will require a Delaware River Basin Commission (DRBC) Ground Water Protected Area (GWPA) withdrawal permit since the projected withdrawal will exceed 10,000 gallons per day. The Basin Commission has already been contacted concerning the proposed project. On-going monitoring of the retrieval well and spray system will provide necessary data for the evaluation of any effects of the ground-water withdrawal relative to GWPA regulations. Due to the relatively low anticipated withdrawal and local return of most of the water to the aquifer, any effects of the withdrawal should be negligible and DRBC cooperation and ultimate approval is anticipated.

## 5.0 GROUND-WATER MONITORING

### 5.1 Water-Level Monitoring

It is proposed that ground-water levels will be monitored in the recovery well, nearby monitoring wells and selected nearby domestic wells in order to monitor existing ground-water flow patterns and determine the size and shape of the cone of influence around the recovery well. The locations of the selected wells for water-level monitoring are shown in Figures 2 and 3. A list of the wells appears in Table 1.

Prior to any ground-water withdrawal, two initial rounds of water-level measurements will be made in all of the selected wells to determine background conditions. At the onset of pumping, the water levels in the recovery well and the five nearby monitoring wells will have to be measured frequently to allow for an adjustment in the size of the cone of influence under the site. Following the initial adjustment period, water levels in the five monitoring wells and the recovery well will be monitored on a monthly basis and as necessary to maintain the desired cone of influence. The cone of influence will be maintained so as to insure at all times that ground-water flow directions are always from the surrounding monitoring wells toward the centrally located recovery well.

Continuous water-level recorders may be employed during the start-up period to facilitate water-level data collection.

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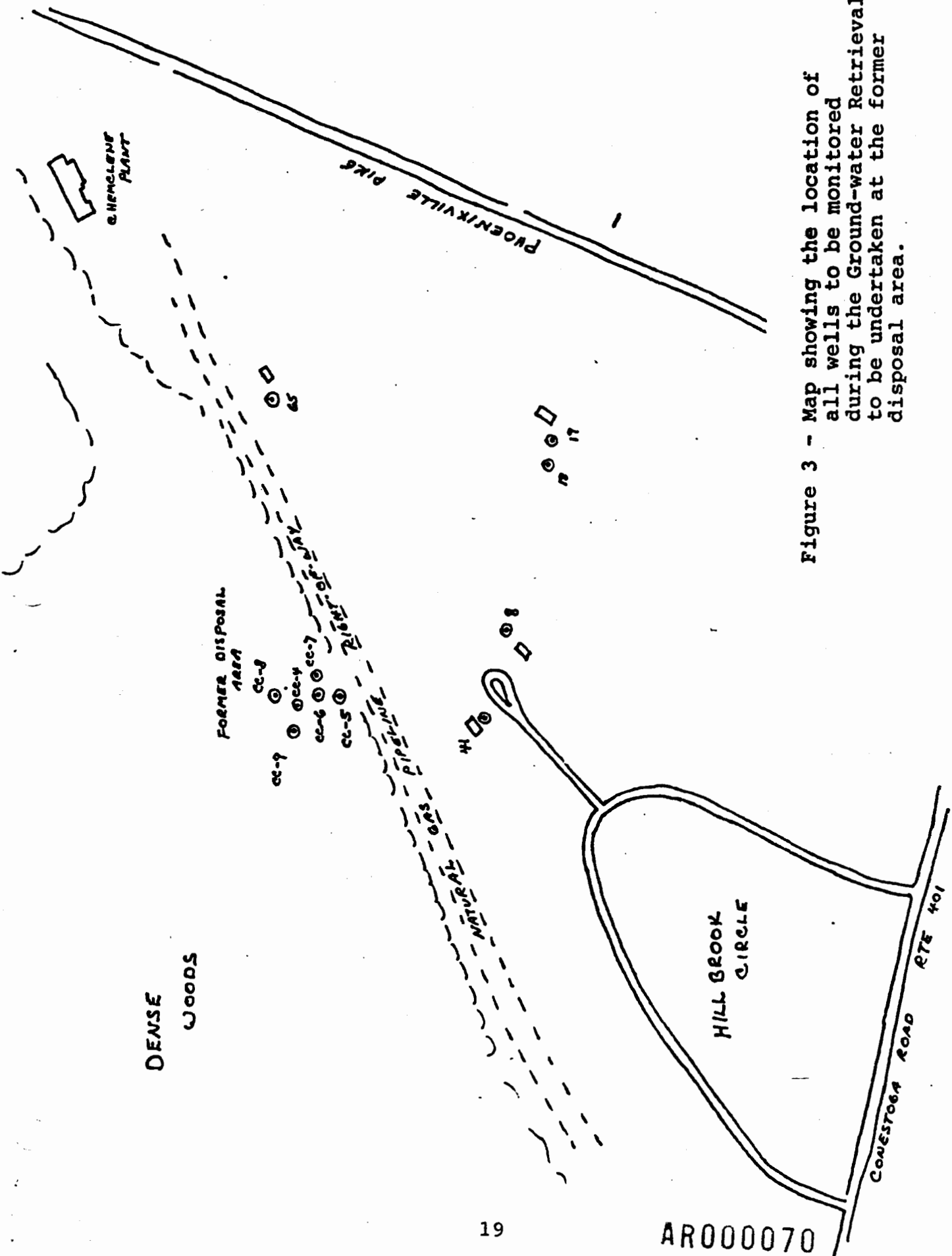


Figure 3 - Map showing the location of all wells to be monitored during the Ground-water Retrieval to be undertaken at the former disposal area.

<u>Well</u>	<u>Type</u>	<u>Measure Level</u>	<u>Collect Sample</u>
cc-4	shallow monitoring	X (when present)	X
cc-5	monitoring	X	X
cc-6	retrieval	X	X
cc-7	monitoring	X	X
cc-8	monitoring	X	X
cc-9	monitoring	X	X
8	abandoned domestic	X	-
18	abandoned domestic	X	-
19	domestic	-	X
65	domestic	X	X

Table 1 - List of wells to be sampled and water levels measured as part of the Ground-water Retrieval Program to be implemented in the former disposal area.

## 5.2 Water Quality Monitoring

Water quality samples will be taken from the recovery well, the nearby monitoring wells and selected nearby domestic wells in order to determine pre-retrieval background water quality and to assess the effectiveness of the retrieval program once the well is in operation. The locations of wells to be sampled are shown in Figures 2 and 3 and are listed in Table 1.

Water samples will be taken of the spray as it reaches the ground using a special "raingage" sampling device. Samples of water moving through the soil will be collected using pan lysimeters. The pan lysimeters will be placed .5 and 2 feet below ground surface.

Prior to the withdrawal of ground water from the recovery well, a water quality sample will be taken from each of the water quality monitoring wells indicated in Table 1. The water samples will be analyzed for the following parameters:

Trichloroethylene (TCE)

Perchloroethylene (PCE)

After pumping begins, water quality samples will be taken from the recovery well and the five observation wells on a monthly basis for the first year of operation and quarterly thereafter. Samples from the domestic wells will be included in the quarterly sampling program if they have not already been included. Samples from the "raingage" and pan lysimeters



will be taken frequently during a start-up test period and monthly thereafter. All samples will be analyzed for the parameters listed above.

## 6.0 SAMPLING AND ANALYSIS

### 6.1 Sampling Procedures

#### 6.1.1. Water-level Measurements

All water-level measurements will be taken with a steel tape or electric water-level probe and recorded to the nearest 1/100th foot. Water-level measurements will be recorded on appropriate data forms. All water-level reference points will be marked in the field and noted on the measurement form. All reference points will be surveyed to determine their elevations relative to the same datum used for all other existing measuring points.

#### 6.1.2. Water Quality

Water quality samples will be withdrawn from the monitoring wells by an approved method so as to ensure the integrity of the sample. Pumping equipment will be used which will minimize aeration of the samples. VOA samples will be collected in special teflon-capped clean glass vials with no air bubbles left in the sample container. Water samples from the special sampling "raingage" and pan lysimeters will be collected immediately as the sample reservoir becomes filled. Samples will be refrigerated until the analysis is performed.

AR000074

#### 6.1.3. Analytical Procedures

All ground-water quality analyses of samples collected according to the schedule set in Section 5.2 will be analyzed by Chemclene with appropriate split samples sent to an approved laboratory. Results of the analyses will be forwarded to the appropriate office of DER upon receipt from all laboratories.

1875 New Hope Street  
Norristown, PA 19401  
215 270-1920

February 17, 1984

Mr. W. Lloyd Balderston, President  
Chemclene Corporation  
258 N. Phoenixville Pike  
Malvern, PA 19355

Re: Groundwater Retrieval Plan  
Chemclene Corporation

Dear Mr. Balderston:

This is to acknowledge receipt of the "Groundwater Retrieval Plan For The Former Disposal Area" dated January, 1984, and prepared for Chemclene Corporation by Earth Data, Inc. The principal review of this Plan will be conducted by Phillip Rotstein, Hydrogeologist, with comments requested from both Marilyn Shup of the Bureau of Water Quality Management, and Frank Holmes of the Bureau of Solid Waste Management.

Please contact this office if you wish to discuss the review of the Plan.

Very truly yours,

VICTOR JANOSIK  
Solid Waste Operations Supervisor

cc: Bruce Beitler  
Phil Rotstein  
Frank Holmes  
Marilyn Shup  
Tony Bartholomeo, US EPA ✓  
Re30  
R3

AR000076.

CHEMCLENE CORPORATION

MALVERN, PENNSYLVANIA 19355  
258 N. Phoenixville Pike

February 27, 1984

Mr. Joseph Feola  
PA D.E.R.  
1875 New Hope St.  
Norristown, PA 19401

Dear Mr. Feola,

This letter is in response to your request for a new design and implementation schedule for groundwater recovery at our plant site.

We would agree that roof spraying has not been a satisfactory, year round recovery method to date but not for the same reasons you have stated. We believe that spray irrigation, whether onto a roof or onto the ground is an efficient, effective and economical method of removing VOC's from water.

Evaluation of our present system shows two problems. First, the water is not being atomized sufficiently to get maximum air/water contact. Second, ice build up in freezing weather, both on the roof and in the runoff area, is excessive and does not permit us to operate the system year round.

We anticipate that the new system will resolve both these problems. Rather than a simple hole in a pipe, we will be using full cone atomizing nozzles. These produce a fine mist rather than a stream. The number of spray heads will be determined during construction and testing so as to maintain maximum flow from the well consistent with optimum atomizing pressure.

The spray header will be constructed so that in freezing weather, it can be easily moved to a location just west of the plant in a wooded area. This will allow us to operate year round.

Implementation schedule will be as follows:

1. Construction and testing completed by April 1, 1984
2. Test results compiled and submitted to D.E.R. by April 9, 1984
3. Operation to begin upon approval of results by D.E.R.

Sincerely,

  
King Graver

AR000077

Department of Environmental Resources  
1875 New Hope Street  
Norristown, PA 19401  
215 276-1920

April 18, 1984

Mr. W. Lloyd Balderston, President  
Chemclene Corporation  
258 North Phoenixville Pike  
Malvern, PA 19355

Re: April 16, 1984 Meeting  
PAD014353445

Dear Mr. Balderston:

This letter reiterates points discussed and agreements established during a meeting held in this office April 16, 1984 and attended by yourself and Mr. King Graver representing Chemclene Corporation, by Mark di Filipiantonio representing U. S. Environmental Protection Agency, and myself and Frank Holmes representing Pennsylvania Department of Environmental Resources. The purposes of the meeting were to discuss the status of the clean-up activities and to establish dates by which certain aspects of the clean-up will be completed. The various aspects of the clean-up are herein addressed separately as follows:

"Open Pit" - the status of the "open pit" remains essentially unchanged since our last meeting of December 22, 1983. Contaminated water within the pit is slated for removal to the DuPont facility in Delaware. It is the understanding of this office that DuPont has found the subject contaminated water acceptable for treatment at the facility. Contaminated soils will be excavated and removed for disposal at the Fondessy Landfill in Ohio. The removal of the water and the soil will be accomplished on or before June 15, 1984 as per our December 22, 1983 agreement.

Mr. di Filipiantonio of EPA noted that he would discuss the soil removal with other EPA officials to determine the extent of removal necessary. Chemclene will be apprised of this determination so that expeditious back-filling of the open pit can be accomplished as soon as acceptable excavation has taken place.

"Closed Pit" - during the December 22, 1983 meeting, Chemclene agreed to remove three truckloads (consisting of approximately two roll-off containers as per previous removals) of kiln dust/sludge mixture for proper disposal before April 15, 1984. However, only one truckload has actually been removed, and another truck was approximately 3/4 full on the site at the time of this April 16, 1984 meeting. Chemclene attributed the delay to frozen soil conditions in January and part of February, and to the temporary inavailability of kiln dust.

It was agreed that Chemclene would remove two truckloads of kiln dust/waste from the closed pit by May 7, 1984, and two additional truckloads by May 23, 1984. Thereafter, Chemclene has agreed to remove one truckload every three weeks until the wastes are completely removed from the closed pit. (It is understood by all parties that these truckloads are independent of any soil removed from the "open pit".)

AR000078

Mr. W. Lloyd Balderston, President  
April 18, 1984

- 2 -

"Groundwater" - the quarterly reports due in March 1984 for contaminant levels in the various wells have not been received. Chemclene Corporation has agreed to submit these overdue reports by May 1, 1984. Chemclene has agreed to submit the June 1984 reports on schedule. Chemclene has also agreed to send copies of these reports to Mr. di Filipiantonio of EPA.

As noted in my letter dated February 17, 1984, this office has received a groundwater retrieval plan for the former disposal area. This office, principally, the Bureau of Water Quality Management has received various documents from Chemclene Corporation over a period of time regarding groundwater conditions and groundwater clean-up proposals for the area of the Chemclene Corporation plant. It was pointed out in this meeting, however, that the EPA considers the Chemclene Corporation property to be one environmental unit for regulatory purposes, and that EPA must review and comment on the acceptability of any groundwater abatement proposals.

Because of this EPA review requirement, this office is hereby requesting that those documents which were submitted to this Department regarding groundwater in the Chemclene Corporation plant area be packaged appropriately and be submitted to Mr. di Filipiantonio, with a copy of the package sent to this office.

"Meeting" - a meeting to discuss future actions regarding clean-up activities at the site has been scheduled for Monday, July 2, 1984 at 10:00 AM in this office.

If you wish to discuss any matters pertaining to the clean-up, please contact this office.

Very truly yours,

VICTOR J. JANOSIK  
Solid Waste Operations Supervisor

cc: Bruce Beitler  
Frank Holmes  
Marilyn Shap  
Mark diFilipiantonio, EPA  
Re 30 E535

AR000079

JUN 5 1984

CHEMCLENE CORPORATION

MALVERN, PENNSYLVANIA 19355

258 N. Phoenixville Pike

6/84

Mr. Victor Janosik  
PA. D.E.R.  
1875 New Hope St.  
Norristown, PA 19401

Dear Mr. Janosik,

This status report is to inform you of the progress we have made against the schedule agreed upon in our meeting of April 16, 1984.

In that meeting, we agreed to have 4 loads of material removed from the pit area by May 25, 1984. As of May 17, 1984, we have removed 3 of those 4 loads.

Just prior to the completion of the last load, our back hoe steering system failed. This has put us behind about one week. Load number 5 is deadlined for June 15, 1984. We now plan to have both loads #4 and #5 removed by that time so that we will again be on schedule.

Dispite the frequent visits of Frank Holmes, we feel that this sort of brief status report might be helpfull. Please note that we are sending a copy to EPA for their information.

Sincerely,

  
King Graver

cc. Mark d'Filipiantonio - EPA

AR000080



## CHEMCLENE CORPORATION

258 N. PHOENIXVILLE PIKE  
MALVERN, PENNSYLVANIA 19355

29 June 1984

Mr. Victor J. Janosik  
Pa. Department of Environmental Resources  
1875 New Hope Street  
Norristown, PA 19401

Dear Mr. Janosik:

The following lists the analytical results of the sampling of groundwater wells in the area of Chemcylene Corporation that was completed 7 May 1984:

Well No.	Concentration (µg/L) 1,1,1-trichloroethane	TCE	PCE
5	<0.5	<0.5	<0.5
9	56.4	92.7	3.2
10	2.2	4.7	0.5
15	0.6	3.0	0.6
17	2.9	6.0	1.8
23	<0.5	<0.5	<0.5
41	311.0	493.0	35.0
57	<0.5	18.0	2.7
65	1.7	3.0	<0.5
CC-2	41.5	40.4	13.7
CC-3	10,000.0	13,000.0	894.0
CC-5	1,504.6	6,827.8	927.1

Please contact me if you need any additional information.

Sincerely,

*W. Lloyd Balderston*  
W. Lloyd Balderston

cc: Mark diFelicianantonio, E.P.A.

AR000081

Department of Environmental Resources

1875 New Hope Street  
Norristown, PA 19401  
215 270-1920

July 10, 1984

Mr. W. Lloyd Balderston  
President  
Chemclene Corporation  
258 North Phoenixville Pike  
Malvern, PA 19355

Re: July 2, 1984 Meeting  
Chemclene Corporation  
PAD014353445  
East Whiteland Township  
Chester County

Dear Mr. Balderston:

This correspondence is to reiterate the various points discussed, and agreements made during a meeting held in this office July 2, 1984, and attended by yourself and Mr. King Graver representing Chemclene Corporation, by Mark diFilicianantonio representing the U.S. Environmental Protection Agency, and by Frank Holmes, Philip Rotstein, Cene Pine and myself representing the Pennsylvania Department of Environmental Resources. The purpose of the meeting was to discuss the status of the cleanup activities to date, and the components of the project which will be completed in the near future. The various aspects of the cleanup are herein addressed separately as follows:

Open Pit

Drummed waste and the soil intermixed with these drums, have been completely removed to the Fondessy landfill in Ohio. Approximately 9,000 gallons of rain water which had accumulated in the pit has been pumped out and taken to the Dupont facility in Delaware. Also, approximately two feet of highly contaminated and discolored soil has been removed from the sides and bottom of the "open pit" and removed to the Fondessy landfill. A backhoe pit approximately six feet deep has been dug in the bottom of the open pit, and seven soil samples have been obtained by sampling at the surface, at 1 foot vertical intervals, and at the bottom of the pit. At the time of the meeting, the analysis results of the soil samples were not available. A discussion was held on the various

AR000082

Mr. W. Lloyd Balderston  
July 10, 1984

- 2 -

possibilities relating to the contamination of the soil remaining under the pit. These possibilities include:

1. That the degree of contamination decreases gradually with depth.
2. That the degree of contamination is essentially homogeneous to the water table.
3. That the contamination level declines abruptly at a "breakpoint".
4. That contamination "hot spots" are present and predominant.
5. That the contamination levels increase with depth.

It is suspected that the contamination levels will be essentially unchanged (Item No. 2 above) to the water table. Any further removal of soil from the Open Pit will be subject to the analysis results and the recommendations of the hydrogeologists involved. A meeting to discuss the disposition of the remaining soils has been scheduled to take place at Chemelene Corporation, July 19, 1984, at 10:30 a.m.

#### Closed Pit

AGES Corporation is analyzing composite samples of wastes pumped from the drums found in the "closed pit". These analyses have found no more than 10 ppm of PCB's in any of the composites. At least six truck loads of wastes from the "closed pit" have been shipped to Fondesary for disposal. Chemelene will continue to remove at least one truckload of waste for disposal every three weeks.

#### Groundwater

The quarterly groundwater report for March 1984 listing the contamination levels in the various wells in the area of Chemelene Corporation was completed May 7, 1984, and was submitted to me at the meeting. The June 1984 sample results are now due. It is anticipated that these will be forthcoming.

The groundwater retrieval plan submitted by Chemelene Corporation and titled "Groundwater Retrieval Plan for the Former Disposal Area - Work Plan for Cleanup and Future Monitoring" has been reviewed by EPA and meets that agency's approval. This approval was noted in a letter from Mark diFilicianantonio to me, and received by me June 11, 1984. You were presented with a copy of this letter at the meeting. Formal comments from the Department of Environmental Resources regarding the acceptability of the groundwater retrieval plan will be offered in the near future.

AR000083

Mr. W. Lloyd Balderston

July 10, 1984

- 3 -

The representatives of the regulatory agencies present agreed that an interagency meeting, the purpose of which would be to discuss the groundwater remediation proposals, especially as related to the "plant area" would be beneficial. Input from the Bureau of Water Quality Management would be necessary at this meeting.

Thank you for presenting us with copies of the correspondence between Chacalana and the Bureau of Water Quality Management.

We look forward to the July 19, 1984 meeting.

Sincerely,

VICTOR J. JANCSEK

Solid Waste Operations Supervisor

cc: B. Beitler

F. Holmes

M. Shup

M. DiFilicianantonio, EPA, CERCLA Enforcement ✓

G. Pine, DER Superfund Section

P. Rotstein

Re 30 IF 132

AR0000084

CHEMCLENE CORPORATION

MALVERN, PENNSYLVANIA 19355  
258 N. Phoenixville Pike

July 12, 1984

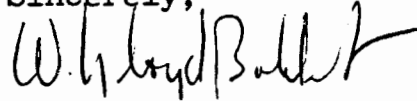
Victor J. Janosik  
Pa. Dept. of Environmental Resources  
1875 New Hope Street  
Norristown, Pa. 19401

Dear Mr. Janosik:

In accordance with my conversation with Frank Holmes I am enclosing the written confirmation of the analytical results of soil samples from the backhoe trench in the bottom of the open pit. These samples were taken at the indicated levels in the trench on 22 June 1984 in the presence of Mr. Holmes.

Please call if you need any more information.

Sincerely,



W. Lloyd Balderston

WLB/cm  
cc: Mark diFelciantonio

AR000085

# AGES<sup>®</sup> LABORATORIES

1151 S. Trooper Road, Norristown, PA 19403 (215) 666-7404

Engineering Consultants - Analytical Services

## ANALYTICAL REPORT

July 8, 1984

Chemciene Corp.  
258 N. Phoenixville Pike  
Malvern, PA 19355

Attn: Lloyd Balderston

Re: Analysis of Solids Samples  
Submitted 6/22/84

AGES Lab I.D. #840855

Trichloroethylene (TCE)

Sample #1' (ONE FOOT)	<1.0 mg/kg sample
Sample #2' (TWO FEET)	<1.0 mg/kg sample
Sample #3' (THREE FEET)	<1.0 mg/kg sample
Sample #4' (4 FEET) (1 unidentified peak)	<1.0 mg/kg sample
Sample #5' (5 FEET)	<1.0 mg/kg sample
Sample #6' (6 INCHES)	<1.0 mg/kg sample
Bottom Sample (2 unidentified peaks)	<1.0 mg/kg sample

Respectfully submitted,

AGES Laboratories

  
Jack Thorne  
Laboratory Manager

JT/mgr



**Earth  
Data  
Incorporated**

GROUND WATER AND ENVIRONMENTAL CONSULTANTS  
ST. MICHAELS, MARYLAND AND WEST CHESTER, PENNSYLVANIA

July 25, 1984

Mr. Lloyd Balderston  
Chemclene Corporation  
258 N. Phoenixville Pike  
Malvern, Pennsylvania 19355

SUBJECT: Closure of open excavation at the former  
disposal area.

Dear Mr. Balderston:

During our field meeting on July 20, 1984 with DER and EPA it was requested by an EPA representative that some technical consideration be given to the materials and procedures that would be used during the filling and capping of the open excavation at the former disposal area. It is our recommendation that you proceed as follows:

1. Begin refilling the excavation when there is little or no water present in the bottom.
2. Fill the excavation with clean, native overburden materials.
3. Compact the soil somewhat by running a backhoe or front end loader over the materials as they are deposited.
4. Fill the excavation up to existing ground surface and grade to conform with existing contours.
5. Let the filled excavation sit for one to two months and through several rain storms.
6. Fill in any depressions caused by the settlement of the soil.
7. Cap the fill material with native topsoils and immediately seed with grass to further prevent soil erosion.

Page 2  
Mr. Lloyd Balderston  
July 25, 1984

8. During all operations use straw bails or other sediment control devices to minimize run-off from the site.
9. Check the excavation periodically to insure that surface drainage is being properly maintained.

It is not recommended to cap the area with clay, concrete or any other permeable material since all materials and soils containing hazardous waste have been carefully removed from the site there is no reason to attempt to retard natural recharge. In fact, it may be beneficial to the overall productivity of the ground-water contaminate recovery system to encourage such recharge.

If you have any questions concerning these recommendations please do not hesitate to contact us.

Very truly yours,

*Tucker Moorshead*

Tucker Moorshead  
Hydrogeologist

TM:lj

cc: Earth Data - PA Office

AR000088



Department of Environmental Resources

1875 New Hope Street  
Norristown, PA 19401  
215 270-1920

August 6, 1984

Mr. W. Lloyd Balderston, President  
Chemclene Corporation  
258 North Phoenixville Pike  
Malvern, Pennsylvania 19355

Re: Soil Samples from "Open Pit"

Dear Mr. Balderston:

As discussed during our on-site meeting July 20, 1984, this office considers the soil sample results which were submitted by Chemclene Corporation, and which represented the analysis of samples taken at intervals from a backhoe pit dug in the bottom of the "open pit" to be unacceptable. These samples were analyzed by AGES laboratories (I.D. No. 840855) using the "head space" method for detection of trichloroethylene (TCE). All seven of the sample analyses recorded only that AGES laboratory found less than 1 milligram per kilogram of TCE. Since the purpose of the sampling and analysis was to determine the contamination trend or pattern in the substrate, the analysis results are essentially unusable.

Again, pursuant to our conversation, I have contacted several laboratories. All authorities agreed that it is difficult to obtain accurate quantitative readings of volatiles in soil samples, but that contamination trends should be detectable within a given set of samples. Methods used by the various laboratories include the "head space" method, modified purge and trap using distilled water, and modified purge and trap using methanol as a solvent. I contacted Mr. Rick Dreisch of the United States EPA (301-224-2740) for information on this type of analysis. You might wish to contact him.

Also, it appears essential that the samples be acquired immediately upon excavation, that the sample containers be completely filled with soil, and that these samples be sealed and cooled for shipment as soon as possible. The samples should be refrigerated while being held in storage. I understand that these procedures were followed in the first sampling.

AR000089

Mr. W. Lloyd Balderston, President  
August 6, 1984

- 2 -

Please contact Frank Holmes at 270-1920 to set up a date for resampling.

Sincerely,

VICTOR J. JANOSIK  
Solid Waste Operations Supervisor

cc: Bruce Beitler  
Frank Holmes  
Gene Pine  
Phil Rotstein  
Marilyn Snao  
Mark diFilicianantonio ✓  
Re 30 1F1(15)

AR000090

AR000091

		74	38
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AR000092

**Date Received**

103

8/7/84

PROJECT <i>Open Pit</i>			CASE <i>Chondra</i>			FACILITY			COLL NUMBER <i>249</i>		
COUNTY <i>Chittagong</i>			MUNICIPALITY <i>F. H. H. H. H. H.</i>			PROGRAM			COLL NAME <i>Francis Holmes</i>		
									TYPE TR		
									STD ANALYSIS		

CARD (3)		ID CODE (ALL CARDS) 4-16					LATITUDE 4-10			LONGITUDE 11-18			DATE 19-24			TIME 25-28			KIND 29		
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USGS 0-30 34		BUREAU 35-37 AMIS					SAMPLE NUMBER 38-43					STREAM NAME 44-57					RELATIVE POINT 58				
		<i>300</i>					<i>2114249</i>														

**FULL DESCRIPTION WHERE SAMPLE TAKEN**

Soil Sample 2 ft below  
bottom of pit

### ADDITIONAL LAB ANALYSES

TCE Seni

**-CUSTODY LOG**

How Shipped *Insulator* Date *8/3/84*

Legal Seal No. 084444

Received by:

**Legal Seal Condition:**

## QUALITATIVE REPORT

**DO NOT WRITE BELOW THIS LINE**

## QUANTITATIVE RESULTS

**ANALYSIS:**

**UNITS:****ANALYSIS CODE**

**RESULTS**  
**(SHOW DECIMAL POINTS ON LINES)**

TCE  
III-TCE  
PCE

pptr  
ppbn  
ppbn

[illegible]

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**ANALYST**

**SIGNATURE**

AR000093

DATE \_\_\_\_\_

AR000094

**Lab Number****Date Received**

## QUALITATIVE REPORT

**DO NOT WRITE BELOW THIS LINE**

## QUANTITATIVE RESULTS

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**ANALYST**

**SIGNATURE**

DATE \_\_\_\_\_

AR000095

AR000096





COMMONWEALTH OF PENNSYLVANIA  
DEPARTMENT OF ENVIRONMENTAL RESOURCES  
BUREAU OF LABORATORIES  
SPECIAL ANALYSES REPORT

Lab Number LC4100098  
Date Received 8/2/84

SHIPMENT <u>3 per Pit</u>		CASE <u>Chlorine</u>		FACILITY		COLL NUMBER <u>257</u>	
COUNTY <u>Cherokee</u>		MUNICIPALITY <u>Elkhartown</u>		PROGRAM <u>Ground Water</u>		TYPE TR <u>STD ANALYSIS</u>	
CARD (3) 1 2		ID CODE (ALL CARDS) 4 - 16 Only Mun T Esr Case Fac.		LATITUDE 4 - 10 0		LONGITUDE 11 - 18 81821387	
USGS 030 34		BUREAU 35 37 AMIS 31010		SAMPLE NUMBER 38 43 2114259		DATE 19 - 24 8/2/84	
				STREAM NAME 44 57		TIME 25 - 28 1215	
						KIND 29	
						RELATIVE POINT 58	

FULL DESCRIPTION WHERE SAMPLE TAKEN.

ADDITIONAL LAB ANALYSES

CUSTODY LOG

How Shipped Persele Date 8/3/84

Legal Seal No. 089439

Received by:

Legal Seal Condition:

QUALITATIVE REPORT

DO NOT WRITE BELOW THIS LINE

QUANTITATIVE RESULTS

ANALYSIS:

UNITS:

ANALYSIS CODE

RESULTS  
(SHOW DECIMAL POINTS ON LINES)

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ANALYST

SIGNATURE

DATE

AR000098

6/14/8

**DO NOT WRITE BELOW THIS LINE**

## DATE \_\_\_\_\_

7/11/8

JUL 16 1990

111-TCE + PCE - none detected

7/11/84

7/11/84

CHEMCLENE CORPORATION

258 N. PHOENIXVILLE PIKE  
MALVERN, PENNSYLVANIA 19355

DER-RECEIVED  
NORRISTOWN

AUG 21 1984

16 August 1984

Ms. Marilyn Shup  
Pa. Dept. of Environmental Resources  
1875 New Hope Street  
Norristown, PA 19401

Dear Ms. Shup:

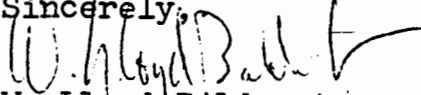
Chemclene has recently completed another test of its roof mounted water treatment system. We are hereby submitting the data from this experimental run so that the Department may determine whether or not Chemclene may use this as a treatment method here at our plant.

While our first trial employed a spray system with 1/16 inch diameter "sprayers", the current system uses spray nozzles that are capable of producing 300 micron water droplets. The test was run between August 4th and 9th, 1984. Samples were taken every day (with the exception of one) from well CC-3 ("before treatment") and from the drainage off the roof ("after treatment"). Sampling occurred at various times of the day and under cloudy as well as sunny conditions. The flow rate (pumping rate from CC-3) was calculated at 4.4 gal/min. This could be increased somewhat, but the last measured yield of this well was about 6 gal/min. The enclosed table shows the actual data obtained during this test run.

Chemclene feels that this treatment method now works very well in that the reduction of the volatile organics was on the order of  $10^{-3}$  and the effluent was less than 30 $\mu$ g/L. We would like very much to use this system on a permanent basis as soon as possible so that we may at last begin to correct the existing problem.

Please let us know as soon as possible of the Department's decision. If you need any additional information, please let me know.

Sincerely,

  
W. Lloyd Balderston

Encl.

AR000102

ROOF SPRAY WATER TREATMENT SYSTEM AT CHEMCLENE CORPORATION  
RESULTS OF SECOND TRIAL  
(4-9 August 1984)

DAY NO.	CONDITIONS SKY      TIME		BEFORE TREATMENT			AFTER TREATMENT		
			TCA <sup>1</sup> µg/L	TCE <sup>2</sup> µg/L	PCE <sup>3</sup> µg/L	TCA µg/L	TCE µg/L	PCE µg/L
1	Clear	1300	24,228	15,518	914	12.5	5.1	<1.0
2	Cloudy	1630	24,527	14,656	1,917	10.1	1.9	<1.0
3	Clear	1400	22,459	13,741	1,781	7.0	1.9	1.0
4	Clear	0900	10,974	14,285	2,444	12.2	10.3	1.4
6	Clear	0900	19,802	12,545	2,091	12.5	6.6	1.6

1 = 1,1,1-trichloroethane

2 = trichloroethylene

3 = perchloroethylene

AR000103

**CHEMCLENE CORPORATION**

**MALVERN, PENNSYLVANIA 19355  
258 N. Phoenixville Pike**

August 17, 1984


Mark diFelicianantonio  
U.S. Environmental Protection Agency  
Region III  
Sixth and Walnut Streets  
Philadelphia, Pa. 19106

Dear Mr. diFelicianantonio:

A short while ago you had asked if Chemcylene could provide E.P.A. with a technical proposal describing how the open pit would be filled in and completed. Enclosed are the technical recommendations from Chemcylene's consultant.

I would appreciate any comments you might have; if you need any additional information, let me know.

Sincerely,



W. Lloyd Balderston

WLB/cm  
cc: Victor Janosik  
Mark Gold

AR000104



## CHEMCLENE CORPORATION

MALVERN, PENNSYLVANIA 19355  
258 N. Phoenixville Pike

August 17, 1934

Mr. Victor Janosik  
Pa. Dept. of Environmental Resources  
1875 New Hope Street  
Norristown, Pa. 19401

Dear Mr. Janosik:

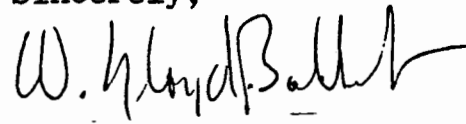
As I told your Frank Holmes on the phone a day or so ago, we have received the results of the analysis of soils taken from the open pit on 3 August 1934. The results are as follows:

SAMPLE	TRICHLOROETHYLENE (mg/kg)
Spoil Pile	8.1
6 Inches	1.1
1 Foot	4.8
2 Feet	3.1
4 Feet	7.9
6 Feet	4.5
Bottom (7 Feet)	13.3

Chemcene is encouraged by these results considering the levels in ground water in this area; we feel this area can now be filled in without further excavation. We hope the Department will be able to make a decision very soon as to whether or not this area can be filled in. At the risk of being repetitious, I would like to state again that time is important as the longer the pit remains open the more likely it is to fill with water from percipitation.

Please let me know if you require any more information. Otherwise, we await the Department's decision.

Sincerely,



W. Lloyd Balderston

WLB/cm  
cc: Mark diFelicianantonio

AR000105

Department of Environmental Resources

1875 New Hope Street  
Morristown, PA 18401  
215 270-1975

August 30, 1984

Mr. W. Lloyd Balderson  
Chemlun Corporation  
258 N. Broadsville Pike  
Halverson, PA 17033

Re: Industrial Waste  
Chemlun Corporation  
East Whiteland Township  
Chester County

Dear Mr. Balderson:

This is in reply to your letter of August 16, 1984 to Marilyn Ship regarding the proposed volatile organic compound recovery program for the Chemlun Corporation plant site.

We note that approximately 5 gpm will be pumped from well CO-3 on a 24 hour basis, seven days per week and sprayed over the roof in order to volatilize the contaminants.

In accordance with your request, emergency approval is granted to discharge the treated recovery water via roof downspouts onto the ground. This emergency approval is for a period of six months and is contingent upon satisfactorily monitoring the discharge for the following parameters at the noted frequencies:

First week - four samples of raw and treated water to be analyzed for 1,1,1-trichloroethane, trichloroethylene and perchloroethylene.

Second week to end of period - one sample per week to be analyzed for the above parameters.

Once per month - full volatile organic analysis on both raw and treated groundwater.

AR000106

Mr. W. Lloyd Balderston

August 30, 1984

- 2 -

The reports of analyses are to be submitted on a monthly basis to this office.

This approval is subject to modification if warranted by unforeseen circumstances. If you have any questions feel free to contact us.

Very truly yours,

JOSEPH A. PICHA

Regional Water Quality Manager

cc: Chester County Health Department  
E. Whiteland Township  
Bureau of Solid Waste Management  
M. Sharp  
Re 30 90242.19

AR000107

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region III - 6th & Walnut Sts.

Philadelphia, Pa. 19106

SUBJECT: Comments on Ground-Water Retrieval Plan for the  
Former Disposal Area Chemcene Corporation,  
Malvern, PA

DATE: 9-17-84

FROM: Paula Luborsky, Geologist

TO: Mark DiFelicianantonio

I've reviewed the retrieval plan for the Malvern site and recommend further investigation and re-evaluation in order (1) to further delineate the paths of groundwater movement in the fractured bedrock of the Carbonate Ledger Formation and (2) to assess the effectiveness of the potential retrieval programs.

Hydrogeology

1. Ground water flow in the Ledger Formation dolomite is not uniform due to the inherent complexity of flow in this fractured bedrock aquifer and due to the existence of large solution channels that have formed in the Ledger (Hall, 1973, p. 49). It is recommended that fracture trace analysis be conducted to identify pathways of groundwater migration from the site. Identified fractures could serve as sites for monitoring wells.

2. Water levels have been monitored in the late 1970's by Moorshead-Siddequi and Leggette, Brashears, Graham, Inc during the Great Valley well investigation. It is recommended that a series of water table maps be assembled so that changes in the water level, due to seasonal changes in recharge and/or changes in rates of pumpage, can be illustrated. The one "snap-shot" map (Fig. 6 of Nov. 81 Report) is not sufficient.

3. Chronological series of isoconcentration maps would also be helpful. Samples have been taken since 1980. Have the concentrations changed?

AR000108

4. Off-site wells are needed to further define the hydrogeologic setting and the extent of the plume. Additional monitoring wells would be beneficial in the evaluation of potential recovery systems (i.e. what is the extent of influence of the recovery wells). Suggested locations include but should not be limited to east and down gradient of the plant site (toward Devault quarry well).

5. Stratigraphy and lithology of the disposal areas are needed since lithology can modify fluid flow and contain migration. Given a good soil profile it would be useful to ascertain: (1) does the concentration of the contaminant change with depth, (2) is the change (if any) correlated with soil type, (3) is the lithology such that the proposed spray irrigation could work effectively regardless of season and without having off-site runoff from the proposed 4-acre site.

6. At least quarterly sampling of the Devault quarry well is needed to assist in determining the actual effect the pumping has on groundwater gradients.

#### Determination of Retrieval Measures

Based upon the description of the spray irrigation system, I am not convinced that this is the best or an adequate remedial measure. I question the effectiveness of the system to decrease volatile concentrations to recommended levels. A thorough literature search should be conducted in this regard. It is not clear where the 4-acre spray area is to be located and if all of the recharge from the irrigation will be effectively recycled through the aquifer and again pumped through the spray irrigation system.

It is recommended that other potential retrieval measures be thoughtfully addressed after the completion of additional hydrogeologic study, and that retrieval and recovery measures be weighed at that time.

It is highly recommended that the recovery method for the disposal areas be dovetailed with recovery for plant site.

AR000109

## CHEMCLENE CORPORATION

258 N. PHOENIXVILLE PIKE  
MALVERN, PENNSYLVANIA 19355

11 October 1984

Bruce Bietler  
Pa. Dept. of Environmental Resources  
1875 New Hope Street  
Norristown, PA 19401

Dear Mr. Bietler:

Since it has been almost three months since Chemcene and the Department of Environmental Resources (DER) have met to discuss the progress of the clean-up efforts here at Chemcene, I thought a progress report might be useful at this point.

With reference to the "open pit", a second set of soil samples were taken from a seven foot deep, freshly dug trench in the bottom of the pit on 3 August 1984. The samples were split for analysis between Chemcene and DER. Chemcene reported its results to DER in a letter to Victor Janosik on 17 August 1984. Subsequently, Chemcene has learned of the DER results. The two sets of data are similar; there was no trend in this soil profile and at many levels the concentration of trichloroethylene in the soil is less than that found in the ground water in well no. CC-5. We feel this is encouraging, especially when one considers Chemcene's groundwater reclamation proposal for the former disposal area.

Chemcene is still awaiting DER comment on this groundwater reclamation proposal. We feel this is a major part of the clean-up at the former disposal area. The soil and groundwater contamination in this area have been persistent over a long period of time and thus covers a large area, especially vertically. Due to the fast mobility of these volatile contaminants it is likely that significant soil contamination is present to the water table. Therefore, Chemcene, as well as its hydrogeological consultant (Earth Data, Inc.) feels that the major emphasis should be placed on groundwater reclamation. In the absence of DER comment/approval of the specific groundwater reclamation proposal, Chemcene has begun work to bring electricity to the site so that implementation of groundwater reclamation will be made easier when the time comes. We expect this electrification to be complete by the end of this month.

AR000110

Work at the "closed pit" is proceeding ahead of schedule. According to the schedule agreed upon in the 16 April 1984 meeting between Chemclene and DER in Norristown, there were to have been 10 truckloads of solidified material shipped to Fondessy Disposal by this date (this is based on one truckload every three weeks plus some "catch-up" loads from the wet late spring we experienced this year). In fact, 14 truckloads have been shipped to Fondessy Disposal.

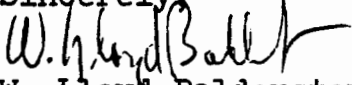
Groundwater reclamation at the plant area is currently in progress on a full time basis. With its "roof system", Chemclene has succeeded in reducing volatile organic concentrations from approximately 22,000 ug/L in the raw water of well no. CC-3 to an average of 11 ug/L (see 16 August 1984 letter to Marilyn Shup, DER). As a result of this demonstrated ability, DER has granted emergency approval to discharge the effluent from this treatment system for a period of six months. We have begun this six month period and the required sampling is being performed.

The demonstrated ability of this treatment system has a significant bearing on our proposal for groundwater recovery at the former disposal area. The spray irrigation proposed in January 1984 has now been proven, to a large extent, and makes the success of our proposal more assured.

In summary, Chemclene has made better-than-expected progress since its last meeting with DER and the U. S. Environmental Protection Agency (EPA). This is a significant accomplishment for a company of our size and resources. While it has not been easy for Chemclene, it proves we can and will proceed with the clean-up as agreed upon. It also shows that we are interested in getting the job done rather than just adhering to a schedule.

Please contact me if you should have any questions.

Sincerely,

  
W. Lloyd Balderston

cc: Eugene W. Pine (DER)  
Mark diFelicianantonio (EPA)  
Marc Gold

AR000111

Post Office Box 2063  
Harrisburg, Pennsylvania 17129  
November 14, 1984

(717) 787-7383

CERTIFIED MAIL NO. PG43 041 237

Chemelene Corporation  
258 N. Phoenixville Pike  
Malvern, PA 19355

Attention: Mr. Lloyd Salderston

Re: Chemelene Corporation Malvern  
TCE Site, East Whiteland Twp.  
Chester Co., PA

Dear Mr. Salderston:

This letter is to respond to the "Groundwater Retrieval Plan for the Former Disposal Area" and certain other technical issues which have been raised in regard to the implementation of ongoing remedial actions at your facility. In addition, certain other matters which may not be of a strictly technical nature require clarification. These issues will be addressed first and will more clearly define the position of both the DER and EPA in this matter.

As you are aware, the Malvern TCE site has been placed on the National Priorities List of potential hazardous waste sites pursuant to Section 105(8)(B) of the Federal Comprehensive Environmental Response, Compensation and Liability Act of 1980 (42 U.S.C. 9601 et seq.) (CERCLA). Pursuant to CERCLA, the Pennsylvania Department of Environmental Resources (DER) and the United States Environmental Protection Agency (EPA) are authorized to expend public funds to investigate and take corrective actions to abate or prevent releases or threatened releases of hazardous substances, pollutants, and other contaminants at National Priorities List sites. Section 104(17) of the Pennsylvania Solid Waste Management Act, the Act of April 7, 1980, P.L. 380, 35 P.S. 56018.104(17) authorizes the Department to receive and expend funds for such purposes.

The DER and EPA believe your firm is a responsible party (as defined in Section 107(a) of CERCLA (42 U.S.C. 9607(a)) for the conditions existing at your facility. Section 107 of CERCLA provides that responsible parties are liable for all costs of response actions incurred by the DER and EPA, including investigation, planning, cleanup measures and enforcement costs.

Section 300.62(e and f) of the National Contingency Plan (49 C.F.R. Part 300) (NCP) provides for the implementation of remedial planning and remedial construction activities at Superfund sites by responsible parties. DER and EPA have been working with your firm for some time in this regard. To date, your firm has expressed a willingness to implement certain remedial actions that DER and EPA have determined appropriate. It is the Department's desire to encourage continued voluntary efforts by your firm. The remainder of this letter shall outline the course of such actions, which must be consistent with CERCLA and the NCP.

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In general, CERCLA and the NCP provide that Remedial Planning Activities at Superfund sites must consist of a Remedial Investigation and Feasibility Study. The Remedial Investigation should be designed to provide any and all data necessary to define the nature and extent of the problems presented by a release or threatened release from the facility (40 C.F.R. Part 300.68(f)). It is the belief of the DER and EPA that your firm has already collected a large portion of the data necessary to constitute an acceptable Remedial Investigation. However, certain data is still required and other data needs further clarification. Many of these required items are addressed in the technical comments below. It is hoped that all data collected will eventually be compiled into a single Remedial Investigation Report which will serve as a data base from which a Feasibility Study can be performed. In this case, the Remedial Investigation Report may consist of a presentation of existing data (in its existing form) with explanatory discussions sufficient to describe the relationships and significance thereof.

The Feasibility Study should meet the requirements of Section 300.68(f) through Section 300.68(j) of the NCP. The purpose of the Feasibility Study is to develop and evaluate remedial action alternatives based on results obtained from the Remedial Investigation. A list of potential alternatives is compiled and evaluated against criteria which address technical, environmental, and economic factors. Again, it is thought that your firm may have already completed a portion of the data base analysis necessary to complete a Feasibility Study. It is expected that upon completion and acceptance by the DER and EPA of a Remedial Investigation Report, your firm will complete a Feasibility Study. Your firm may elect, however, to submit a combined Remedial Investigation/Feasibility Study Report.

In addition, it is recommended that a Consent Order and Agreement be formulated and signed between your firm and the DER and EPA in the near future. This will more clearly define each step required to successfully implement cleanup activities at the Chemclene site.

The Department offers the following technical comments and recommendations on specific proposals submitted by your firm and by your consultants, Earth Data, Inc.

I. "Open" and "Closed" pit areas

- A. With reference to the second set of soil samples taken on August 3, 1984, it appears that while the concentrations of volatile organics in the soil are significant, no conclusive trends (i.e., a marked increase or decrease with depth) exist beneath the pits. Based on these results, it is likely that the soils and unconsolidated material beneath the pits will exhibit a relatively uniform concentration of volatile organics extending to the water table. In addition to the above-referenced soil analyses, this conclusion is supported by the length of time available for contaminant migration beneath the pit, the mobile behavior of volatile organics in the subsurface environment, and the levels of said contaminants already detected in the groundwater system through the periodic monitoring of wells in the area.

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Based on these conclusions, the DER and EPA believe that following the completion of drum/interstitial soil removal in the "closed" pit, additional testing and extensive excavation of soil in the pits is not warranted. Rather, the DER and EPA feel the major emphasis in the remedial program must be on a properly designed groundwater recovery and treatment system which will be an effective, long-term method of reducing pollutants to acceptable levels. Our comments and recommendations on such a system are presented in the next section.

- B. I understand that the excavation of the "open" pit is complete and that the removal of drums and soil from the "closed" pit is proceeding ahead of schedule. Upon completion of the drum/interstitial soil removal for the "closed" pit, the pit should be inspected for any areas of obviously discolored (highly contaminated) soils from the sides and bottom. These soils must also be removed (this procedure was also followed for the "open" pit). Both pits should then be backfilled with clean soil and properly graded, compacted and vegetated. In addition, the Department should be notified prior to the backfilling operation so that a final inspection of the pit areas can be conducted. Details of the entire operation should be submitted to the Department in the form of a Closure Plan. Such a plan should address the need to perform periodic maintenance on the closed pits (i.e. repair of subsidence).

## II. Proposed Recovery/Monitoring Well System

- A. It has been previously documented that the predominant direction of groundwater flow is to the east-northeast towards the Glasgow and Cedar Hollow quarries, both of which pump considerable quantities of groundwater on a continuous basis. It was also indicated (from conversations with your consultant, Earth Data, Inc.) that seasonal fluctuations in the groundwater system produce a secondary, albeit less significant, component of flow to the south towards Valley Creek. In order to contain the migration of contaminants to the south, and to successfully capture the contaminant plume under the spray irrigation area, we recommend that an additional recovery well be drilled. Well CC5 could be converted to a recovery well and the proposed recovery Well CC6 should be relocated approximately 100-150 feet northeast of its original position. In any case, long-term pumping tests must be conducted to accurately determine the effectiveness of recovery well placement(s) and specific discharge rates necessary to produce and maintain a cone of depression which will encompass both the disposal pit and spray irrigation areas. Water table elevation measurements must be taken before, during, and after these tests to help determine the limits of this zone of influence. Existing adjacent residential wells should also be utilized as measuring points.
- B. The general locations proposed for monitoring Well CC7, CC8 and CC9 are acceptable. However, if Well CC5 is "converted" into a recovery well, provisions should be made for periodic monitoring

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of a well located to the south towards Valley Creek. This may involve drilling a new monitoring well, or if this is not feasible, monitoring an existing residential well in the area.

- C. Well casings should be made of steel rather than thermoplastic casing due to the elevated concentrations of chlorinated organic compounds present in groundwater. This will eliminate leaching of any undesirable constituents from thermoplastic materials and will allow more representative groundwater analyses.
- D. Design and construction details of all recovery and monitoring wells must be provided to the Department.
- E. To properly delineate the extent of the existing contaminant plume and to monitor any effects that the groundwater recovery/treatment operation may have on areas downgradient from the disposal and plant sites, it is highly recommended that provisions be made to install a monitoring well located downgradient (i.e., east-northeast) from Chemelene between the plant and the quarries. The location of this well can be discussed with the DER and EPA.
- F. In conjunction with the monitoring program, new groundwater contour and contaminant isocon maps must be developed. Initially, a "background" map should be prepared which depicts recent pre-pumping conditions. As groundwater recovery progresses, these maps should be periodically updated to accurately reflect the influence of the recovery system and effectiveness of the treatment method.
- G. The Department highly recommends that additional wells be included in the proposed groundwater sampling/monitoring plan. Such locations should include private wells both within and beyond the current extent of groundwater contamination. This will help determine both the effectiveness of the groundwater recovery/treatment system and the migration of the contaminant plume.
- H. Analysis for 1, 1, 1, - Trichloroethane should be included with the other parameters in the monitoring program.

### III. Spray Irrigation System

- A. Although the DER and EPA are not opposed to the concept of a spray irrigation system as a method of reducing volatiles in groundwater, the effectiveness of such a system as a continuously operating, long-term remedial method has not been established. Ultimately, the DER and EPA feel that a treatment system must be developed which can function throughout the year, is not affected by freezing conditions or soil loading limitations, and will maintain a constant cone of depression under the spray area. Both an air-stripping tower and air-lift techniques are possible alternatives and must be investigated.

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- B. Before any approval(s) can be issued by the Department regarding implementation of the spray irrigation system, additional data and information must be submitted to the Department. This is detailed below:
1. A more extensive soil analysis needs to be conducted. The degree of biodegradation, buildup and migration of volatile organic compounds in the soil medium needs to be addressed. Also of concern is the immediate and long-term effects on plantlife. It is expected that at least partial answers to these concerns can be provided at the end of the 6-month trial program for the spray system.
  2. A soil testing program within the designated spray area must be developed which includes provisions for soil sampling prior to, during, and upon completion of the spray irrigation. Sampling should be conducted at predetermined locations at various depths to fully characterize the on-site soils prior to spraying. Data on soil types, textures, consistencies, profiles, hydraulic properties, etc. will aid in the determination of applicable loading rates.
  3. Supporting documentation must be provided to support the determination that two to four acres is sufficient for a proposed application rate of 50 to 100 inches per year.
  4. An additional monitoring well should be installed, either within or on the downgradient "edge" of the spray irrigation area in order to assess the changes in groundwater quality over the life of the project. The design should be consistent with that of the other proposed wells. In addition, drawdown effects could be measured in this well which will help delineate the cone of depression formed by the recovery well(s).
  5. A specific delineation of the proposed spray irrigation area should be included on a site map.
- C. The potential for off-site migration of organic vapors to adjoining residential areas must be investigated. The direction of any vapors will primarily be controlled by the prevailing wind direction. Human health effects as a direct result of exposure to vapors is a matter of concern. During the initial stages of the program, air monitoring devices could be stationed at specific off-site locations and/or the property boundary to monitor vapor concentrations under varying climatic conditions. The concept and establishment of an air monitoring program should be investigated, and we suggest that you contact DER's Bureau of Air Quality Control, 1875 New Hope Street, Norristown, PA 19401, Telephone (215) 270-1900, for further information and any approvals which may be required.
- D. Following Departmental evaluation of this additional data, the Department will consider allowing a six-month trial operation of

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the spray irrigation system. If the Department elects to allow such a trial operation, performance data (soil/water analyses) should be submitted as frequently as necessary in order to facilitate proper assessment of the system.

- E. It must be noted that even if the data collected over the trial period indicate the system is functioning as intended, the concept of long-term spraying may not be acceptable. A more viable solution, as previously mentioned, would be a permanent air-stripping tower with discharge of effluent to stormwater swales or ditches. (Note that this discharge must be approved by DER's Bureau of Water Quality Management. The Bureau will also determine the effluent limits).
- F. After two or three months of spray irrigation, a more comprehensive assessment of other alternatives to spray irrigation must be developed. This will constitute an important part of the Feasibility Study described earlier in this letter. The assessment should be completed prior to termination of the spray irrigation trial period. Adequate time must be allotted for the development and implementation of such an alternate system, should it be proven necessary.

I wish to emphasize the Department's desire to continue working with you in bringing about the ultimate cleanup of this site. We are pleased that you have responded in a cooperative and positive manner to date. Both the DER and EPA stand ready to meet with you or your representatives at any time to discuss the technical details of this response or general issues concerning which you may have questions. In this regard, please feel free to contact me at the telephone and address listed above. Any questions or comments to the EPA should be directed to Mark DeFelicianantonio at (213) 597-8185.

Sincerely,

Eugene W. Pine  
Emergency and Remedial Response Section  
Division of Operations  
Bureau of Solid Waste Management

cc: Attorney Embick  
Ms. Hodgkiss (EPA) ✓  
Mr. DeFelicianantonio (EPA)  
Ms. Luborsky (EPA)  
Ms. Shup  
Mr. Rotstein  
Mr. Beitler  
Mr. Pine  
Mr. Worley  
Mr. Steiner  
File  
Chron.

EP:wek

AR000117



(717) 787-7383

COMMONWEALTH OF PENNSYLVANIA  
DEPARTMENT OF ENVIRONMENTAL RESOURCES  
Post Office Box 2063  
Harrisburg, Pennsylvania 17120  
January 16, 1985



*Mr. Di Feliciano*

CERTIFIED MAIL NO. P643 041 239

Chemclene Corporation  
258 N. Phoenixville Pike  
Malvern, PA 19355

Attention: Mr. Lloyd Balderston

Re: Chemclene Corporation  
Malvern TCE Site  
East Whiteland Township, Chester  
County, PA

Dear Mr. Balderston:

It has been nearly two months since the Department issued its response to the proposed ground-water retrieval plan as well as other technical issues relative to ongoing and proposed remedial actions at your facility. Since all parties involved are working towards the ultimate cleanup of the site, both the Department and EPA feel that certain remedial actions, as discussed in the Department's letter, should be initiated as soon as possible. Certain aspects of these actions will require clarification and subsequent discussions between the Department, EPA, your firm and your consultant, Earth Data, Inc. The Department encourages such interaction and wishes to emphasize its importance in the remedial program.

At this time, the Department would request a written response from your firm affirming your desire to continue the voluntary implementation of remedial measures at your site. In addition, we would also request a progress report on the current status of all completed, ongoing and proposed remedial actions at your facility. Such a response should be submitted to the Department no later than ten (10) business days following receipt of this letter. In this regard, please feel free to contact me at (717) 787-7383 if you have any questions.

Sincerely,

Eugene W. Pine, Project Manager  
Emergency and Remedial Response Section  
Division of Operations  
Bureau of Solid Waste Management

AR000118

cc: Attorney Embick  
Ms. Hodgkiss (EPA)  
Mr. DeFeliciano (EPA) ✓  
Ms. Shup  
Mr. Rotstein  
Mr. Beitler  
Mr. Pine  
Mr. Worley  
Mr. Steiner  
File  
Chron.

EWP:wek

AR000119

Gene P.

PHONE: (215) 644-2986

**CHEMCLENE CORPORATION**

258 N. PHOENIXVILLE PIKE  
MALVERN, PENNSYLVANIA 19355

22 March 1985

5861 93 877

RECEIVED  
GENERAL

Joseph A. Feola *JAF*  
Regional Water Quality Manager  
Pa. Dept. of Environmental Resources  
1875 New Hope Street  
Norristown, PA 19401

Dear Mr. Feola:

This is to report on the six month emergency trial water treatment program (roof spray water treatment system).

Enclosed is the data for the second month plus two weeks (through 8 January 1985). On 13 January 1985 this treatment system had to be shut down due to the extreme weight of ice on the roof; we came extremely close to complete roof collapse. In the process of removing the ice and effecting repairs we also removed the spray system. The system has not been re-installed to date.

While we had to stop the program, we feel that the data generated is of value. Except for the ice build-up problem, the system continued to effectively treat the water at temperatures close to (and once at) freezing.

Baised on this data, we would like to move the system to a wooded area west of the present location. Here we would propose to analyse water for the same compounds at the soil surface and at some shallow depth(s) below the soil surface. We feel there would be no problem in running this system year round.

We would be happy to discuss this matter on site with M. Shup at any time. Please let us know of your decision.

Sincerely

*W. Lloyd Balderston*  
W. Lloyd Balderston

Enclosure.  
cc: M. Shup

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ROOF SPRAY WATER TREATMENT SYSTEM AT CHEMCLENE CORPORATION  
SIX MONTH EMERGENCY TRIAL PROGRAM (OCT 1984 - MARCH 1985)

SECOND MONTH PLUS TWO WEEKS

DATE	AIR TEMP. (°C)	BEFORE TREATMENT			AFTER TREATMENT		
		TCA <sup>1</sup> ug/L	TCE <sup>2</sup> ug/L	PCE <sup>3</sup> ug/L	TCA ug/L	TCE ug/L	PCE ug/L
28 NOV 84	12	7,252	6,345	655	10.3	3.5	< 1.0
5 DEC 84	4	6,020	3,577	283	31.2	33.6	2.1
11 DEC 84	8	6,103	3,706	159	15.4	4.5	4.0
18 DEC 84	14	6,633	4,353	258	11.3	1.3	< 1.0
31 DEC 84	4	6,540	4,228	186	19.5	8.6	< 1.0
8 JAN 85	0	6,490	4,180	173	23.5	10.9	1.4

1 = 1,1,1-trichloroethane

2 = trichloroethylene

3 = perchloroethylene

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WORK PLAN  
TO COMPLETE  
REMEDIAL INVESTIGATION  
AND  
FEASIBILITY STUDY  
FOR THE  
MALVERN TCE SUPERFUND SITE

JULY 1986

PREPARED FOR

CHEMCLENE CORPORATION  
258 N. PHOENIXVILLE PIKE  
MALVERN, PENNSYLVANIA 19355

PREPARED BY

EARTH DATA INCORPORATED  
605 S. TALBOT STREET  
ST. MICHAELS, MARYLAND 21663  
(301)-745-5046

AND

34 E. MARKET STREET  
WEST CHESTER, PENNSYLVANIA 19382  
(215)-436-4773

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## 1.0 INTRODUCTION

### 1.1 COMPANY BACKGROUND

Chemclene Corporation sells and recycles industrial cleaning solvents. For over 30 years, they have maintained a successful and innovative recycling facility at their present location in Malvern, Pennsylvania. Products handled by Chemclene include the industrial cleaning solvents, trichloroethylene (TCE), 1,1,1,-trichloroethane, perchloroethylene (PCE, also called tetrachloroethylene) and methylene chloride. Chemclene employs a distillation process that results in (1) the removal of impurities from a particular solvent so that it can be returned to a customer for reuse and (2) the formation of small to moderate quantities of sludge which is sent via a licensed transporter to an approved disposal facility.

### 1.2 PROBLEM IDENTIFICATION

In 1980 Chemclene initiated a voluntary investigation of ground-water quality which identified the presence of chlorinated hydrocarbon compounds in both on site and nearby residential wells. Because of previous work in the area Chemclene's consultant, Earth Data Incorporated (formerly Moorshead-Siddiqui and Associates) had already accumulated a large amount of hydrogeologic data for the area including an inventory of every well within .5 miles (69 wells) of the site. In addition to geologic data, well data, fracture trace maps and air magnetic maps the data base also included

extensive information concerning the major ground-water withdrawals in the area (Philadelphia Suburban Water Company's Great Valley Well and quarry dewatering at Devault). As part of the previous work the location of ground-water divides had been established and the nature of the local and regional subsurface flow systems defined. The measuring point elevations of over 40 wells had also been determined and hundreds of water-level measurements were made. Continuous recorders were installed on some wells and long-term pumping tests were performed on the Great Valley Well. All of this work is described in a consulting report prepared by Leggette, Brashears and Graham Inc. (1979) for the Philadelphia Suburban Water Company.

Between 1980 and 1982 additional field work was undertaken to define contaminant distribution in the ground-water reservoir. Hundreds of water samples were collected for VOC analysis along with other data.

The hydrogeologic work performed for the Chemcene Corporation is described in the following consulting reports: PRELIMINARY GROUNDWATER QUALITY INVESTIGATION FOR CHEMCENE CORPORATION, MALVERN, PENNSYLVANIA - Initial Summary of Data and Clean-Up Options (March 1982) and Addendum I GROUNDWATER QUALITY INVESTIGATION FOR CHEMCENE CORPORATION, MALVERN, PENNSYLVANIA - Work Plan for Clean-Up and Future Monitoring (September 1982). Copies of these reports are found in Appendix A and Appendix B respectively.

After VOC's were found in nearby wells, the presence of an abandoned disposal area on the Chemclene property (see Figure 1) filled with buried and unburied 55 gallon drums quickly became the focus of attention by all concerned. Monitoring wells were constructed at the site.

### 1.3 VOLUNTARY REMEDIAL ACTION

In order to reduce exposure to VOC's, domestic wells having concentrations of TCE above 4.5 ppb were equipped with carbon filters. The efficiency of the individual systems are still checked regularly and the filters are replaced as needed. As aquifer renovation continues those wells showing no detectable VOC's for one year will probably have their filters removed.

In agreement with the Pennsylvania Department of Environmental Resources (DER) and with the full knowledge of the U.S. Environmental Protection Agency (EPA), Chemclene Corporation took the initiative and completely removed the contents of the two excavations at the former disposal area. Removal and disposal included pumping, excavating, solidifying and transporting to approved hazardous waste facilities: drums, matrix soils, contaminated surface water and all other miscellaneous items found in the two excavations. A considerable volume (6 tractor trailer loads) of contaminated soils surrounding the pits was also removed. All aspects of this operation will be described in more detail in the RI/FS report.

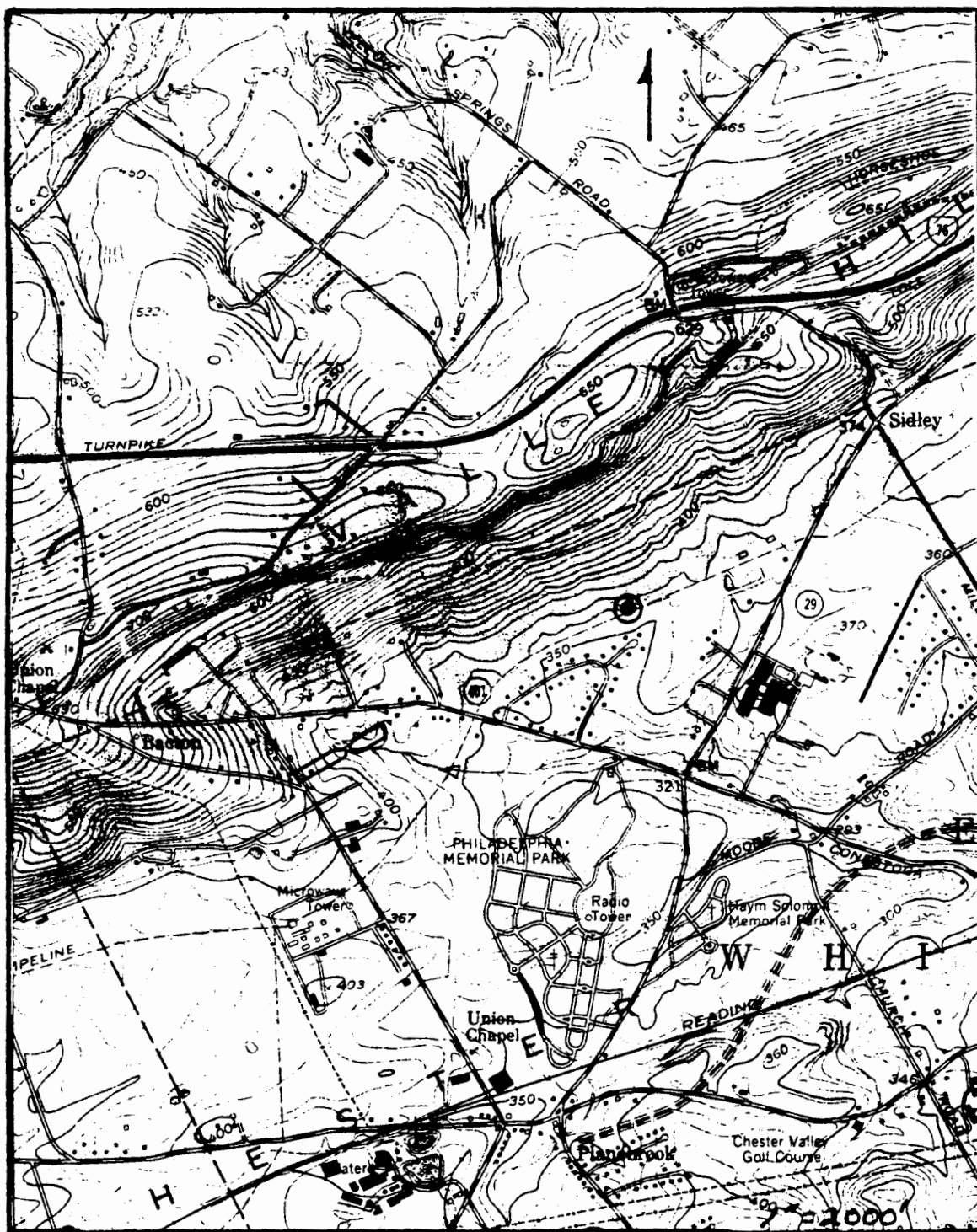


Figure 1 - Location of Chemclene Corporation former disposal area on a portion of the U.S.G.S. Malvern 7 1/2 min. quadrangle.



Presently there exists two empty pits inside a .25 acre fenced enclosure. The upper pit is partially filled with water resulting from shallow side hill seepage. The other pit is normally dry but does partially fill with water during the winter and spring and sometimes after major storm events. The water table at the site fluctuates between 30 and 60 feet below ground surface (15 to 45 feet below the bottom of the excavations). Based on previous studies, ground-water flow under the pits is believed to be toward the quarries at Devault; however, exact flow directions and gradients under the excavations have not yet been established. One of the tasks outlined in this Work Plan will be to construct additional monitoring wells to not only collect water samples but also to establish ground-water flow directions.

#### 1.4 PRESENT STATUS OF CONTAMINATION

While the source of contamination has largely been removed there still exists some contamination in ground water and soils that resulted from the presence of the now removed source. It is the intent of this Work Plan to outline a strategy to more precisely identify the extent and degree of this present contamination (RI) and to develop effective alternatives to remediate the problem (FS). Based on our knowledge of the former disposal area, contaminants may be present in the local environment as follows:

1. In unfound containers buried beneath the ground surface (Chemclene officials have no indication that wastes were ever put anywhere except in the former disposal area).

2. In soils and the overburden surrounding and under the empty excavations.
3. In a ground-water plume moving away from the pits.
4. In surface water where the ground-water plume discharges to a pond, spring or stream.
5. In stream sediments.
6. In the air, as soil gas discharge or as the result of remedial pumping and treatment.

Even though the source has been eliminated, contamination will continue to move in the environment due to both natural and man-made forces which act in a dynamic manner. The concentration of these contaminants will slowly decrease in time due to: continued movement, discharge to the air, discharge to rapidly moving surface water bodies, dilution, dispersion and biochemical degradation.

#### 1.5 PURPOSE OF THE WORK PLAN

The purpose of this Work Plan is as follows:

1. Identify existing data gaps.
2. Outline those activities necessary to fill the identified data gaps.
3. Develop alternative concepts for remedial action.
4. Identify and describe the work tasks necessary to fill data gaps and to evaluate proposed remedial alternatives.
5. Provide a tentative schedule and other details for implementing the RI/FS and for providing a written report.

It has been suggested by regulatory officials that since much work has already been done at the site to collect necessary data and to implement remedial actions that the RI/FS

process could be undertaken concurrently and presented in one combined report. If agreeable to EPA, that would be Earth Data's approach.

The report formats presented in Section 9 of both GUIDANCE ON REMEDIAL INVESTIGATIONS UNDER CERCLA (1985) and GUIDANCE ON FEASIBILITY STUDIES UNDER CERCLA (1985) would be used to prepare the final report resulting from the combined work effort. These two guidance manuals were thoroughly reviewed during the preparation of this Work Plan.

## 2.0 DATA NEEDS

### 2.1 GENERAL DATA NEEDS

An expanded sampling program and the installation of monitoring devices are needed to collect data on a regular basis to describe and better understand the air, earth, water framework of the former disposal area and the adjacent area. Data is needed to quantify the distribution of contaminants at and away from this site. Data is needed to develop remedial alternatives and to assess their relative effectiveness. Finally, data is needed to implement and operate remedial systems and to document the changes which will indicate improvement in the quality of the environment originally affected by the waste disposal site.

### 2.2 SPECIFIC DATA NEEDS

Data gaps identified during the preparation of this plan are recognized. Specific data necessary to further define the environmental framework of the area and the extent of contamination include the following:

1. Geologic and geophysical maps to define the subsurface structures which control groundwater flow in the area.
2. Water quality data from additional monitoring wells to more accurately define the contamination plume in the vicinity of the former disposal area. Data from an "upgradient" monitoring well is especially needed.
3. Contaminant concentration data for soils and other sediments including on-site soils and stream sediments. This includes data relative to VOC's and PCB's identified in the wastes which were removed.

4. Water-level data at different depths to define the subsurface flow system in three dimensions and to determine the affect of shallow, perched water on the former disposal area.
5. Water quality and flow data for nearby streams and springs.
6. Continued and regular water quality data from the domestic and monitoring well network to define concentration variations with time.
7. Water-level data over time (especially at the pit) to more accurately record fluctuations on a seasonal basis.
8. Data concerning air quality, biota and potential risks to human health.

Some of the procedures and monitoring points necessary to collect the above data, along with the existing monitoring network will be used to test various remedial alternatives. It is the intent of the Chemclene Corporation to continue to implement remedial measures as long as they are deemed to be necessary and effective.

### 3.0 WORK PLAN ELEMENTS

#### 3.1 LIST OF WORK TASKS

In order to meet the stated purposes of this Work Plan and to complete the RI/FS for the site, Earth Data proposes the following work tasks:

3.1.1 Update Existing Data Base - Data and information concerning the site is constantly being generated. For instance, the U.S. Geological Survey is completing a hydro-geochemical investigation of the Chester Valley which includes the Malvern site. Existing data from all available sources will be reviewed, updated and tabulated.

3.1.2 Develop Site Safety Plan - While the threat to human exposure has been greatly reduced now that the source of contaminants has been removed, a site safety plan will nevertheless be developed to cover drilling, testing and sampling activities. The site safety plan will conform with EPA guidelines

3.1.3 Collect Samples and Data from the Existing Monitor Network - Water samples will be collected from the existing and expanded network of monitoring points as dictated in the Sampling Plan. Water levels will be measured in wells and streamflow measurements will be made. A regular schedule of sample collection will be established for the entire network.

3.1.4 Undertake Magnetic Survey - A magnetic geophysical survey will be conducted around the pit area to locate any other buried metal objects. If no metal objects are

encountered the survey results may also be helpful in determining the buried contact between the carbonate and non-carbonate rocks at the foot of Bacton Hill. (It is realized that the existing chain-link fence around the site will impact the magnetic survey.)

3.1.5 Prepare Base Maps - A topographic base map of the monitoring network will be prepared along with a detailed plan of the former disposal area. Elevations will be established to existing datum's and the maps will indicate buildings, tree lines, roads, surface water features and other pertinent features.

3.1.6 Locate and Construct Retrieval Well - As Figure 2 indicates, the tentative location of a retrieval well (CC-6) has already been selected. The actual location will be chosen following a review of fracture trace maps and geophysical survey results. It is intended that this well produce 10 to 30 gpm so its location on a fracture system is important. The retrieval well will be 6 inches in diameter and drilled to a depth of approximately 100 feet or until the first major water bearing zone is encountered. The well will be developed with cable tool equipment so as to minimize the problems associated with disposing of contaminated water. The well will be used for various testing purposes and would be converted to a permanent retrieval well if the results of the testing are successful and site conditions warrant the implementation of a containment and recovery program.

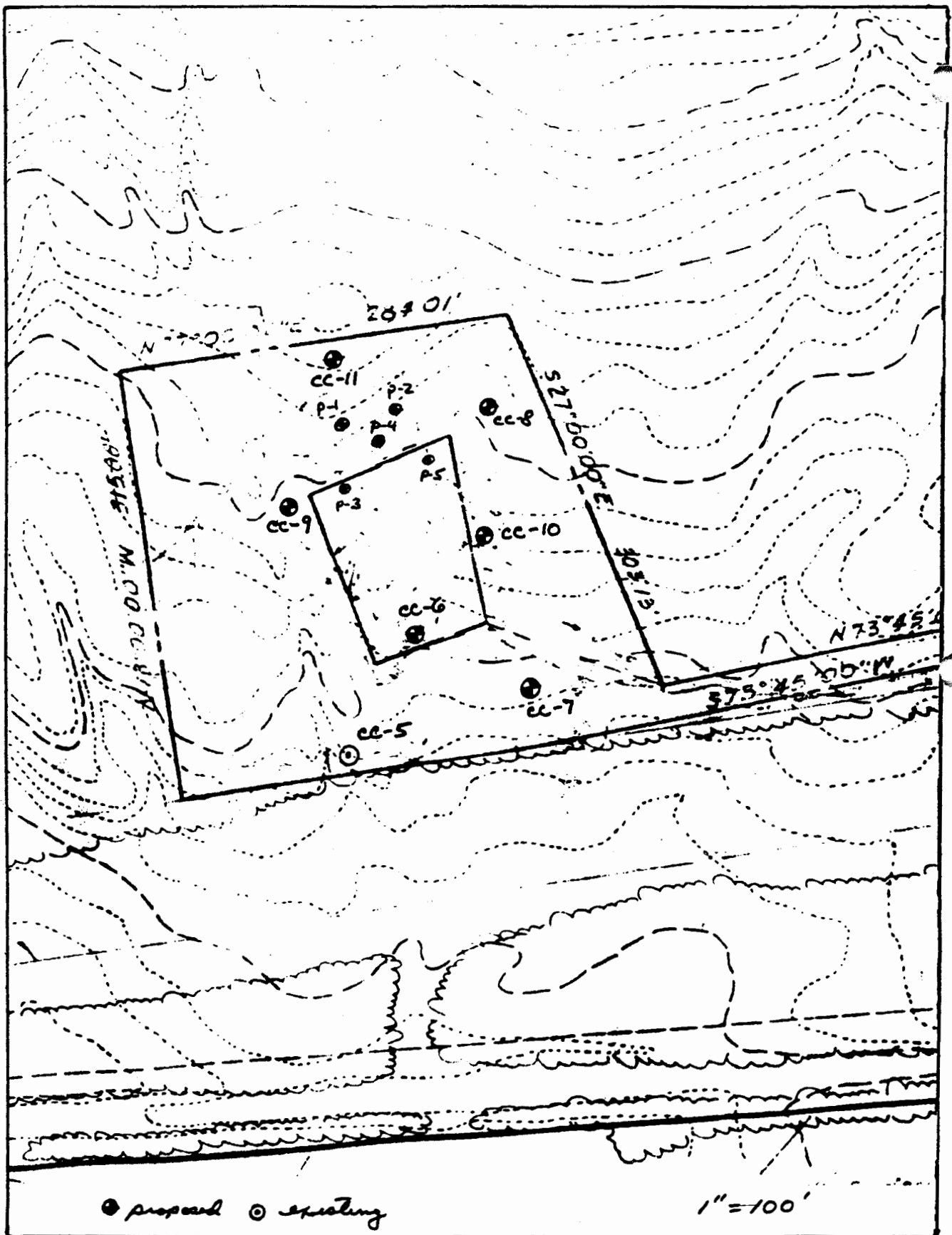


Figure 2 - Map showing the location of the proposed retrieval well (CC-6), existing and proposed monitoring wells (CC-1, etc.) and shallow monitoring wells P-1, etc.



3.1.7 Locate and Construct Additional Monitoring Wells at the Site - It is proposed that additional monitoring wells be installed at selected locations around the former disposal area. These wells would serve as ground water-level measurement points for the determination of the size and configuration of the cone of influence that will exist around the recovery well. These wells are also intended to serve as water quality monitoring points to access pre-retrieval conditions and to monitor the effectiveness of the ground-water containment and recovery program if it is implemented.

A system of seven deep monitoring wells is proposed. One of these will be existing Well CC-5. The tentative locations of the proposed monitoring wells are shown in Figure 2. The locations of the monitoring wells are also selected to be able to serve as observation points in the event that Well CC-5 or CC-10 is used as a recovery well instead of CC-6.

The monitoring wells will be drilled using air rotary equipment. All wells will be six inches in diameter and have either steel or thermoplastic well casing. The wells will be drilled deep enough to encounter sufficient water producing zones from which representative water-level measurements and water quality samples can be taken. In the event that subsurface conditions are not suitable for open borehole construction (i.e., collapse of borehole) an individual well could be constructed of four inch I.D. PVC casing with screened intervals set at appropriate depths to intercept

water producing zones. The annular space of these wells would be gravel packed with clean sand and properly grouted to prevent leakage. Protective steel casing will be cemented at the surface and all monitoring wells will have locking caps installed to prohibit unauthorized access to the wells. All monitoring wells will be developed as necessary to allow for the free movement of ground water into the well from the surrounding formation.

Well CC-11 would be located to serve as an upgradient well and background water quality sampling point in the network.

**3.1.8 Locate and Construct Shallow Monitoring Wells at the Site** - In order to determine the nature of the shallow perched system, five shallow steel drive points will be installed upgradient from the site. Levels in these wells will be measured to determine the depth to any seasonally changing shallow flow system. This network will be used to determine if shallow subsurface run-off should be directed around the site or diverted into the excavations to enhance contaminant removal.

**3.1.9 Develop Removal and Treatment Criteria** - In conjunction with EPA, criteria will be developed to be used to determine what action and treatment may be necessary in dealing with contaminated ground water, soils and air. The development of these criteria will not only include setting concentration levels for various remedial alternatives but will also attempt to define cost effective field techniques to quantify contaminant concentrations in soils. The

establishment of these criteria will necessarily require a well defined Sampling Plan.

3.1.10 Develop Sampling Plan - A detailed Sampling Plan will be prepared soon after acceptance of the Work Plan that will identify sample locations, types of samples, justifications, sampling procedures, sample analysis requirements and chain-of-custody procedures. The plan will cover samples to be collected from wells, soils, streams, ponds, quarry sumps and stream sediments. Special sampling requirements for on-going monitoring and for the Feasibility Study will also be included in the Sampling Plan. The Sampling Plan will detail specific chemical, physical and biological parameters with particular emphasis on VOC's and PCB's.

3.1.11 Collect Samples - Samples of water and soil will be collected according to the Sampling Plan. Samples will be collected to define contaminant concentration and distribution in three dimensions over the entire area. Selected samples will also be collected to determine concentration changes in time and to assess the performance of prototype remedial systems.

3.1.12 Perform Other Remedial Investigations - Where necessary and to provide information for the RI/FS report, various surface water, air and biota investigations will be undertaken. The extent of each of these particular investigations may be somewhat limited due to natural features in the area and the present state of the former disposal area.

### 3.1.13 Assess Public Health and Environmental Concerns -

The present impact of existing contamination (in soils and ground water) on human health and the environment will be evaluated. If any additional immediate and direct potential affects are identified, action to protect health will be immediately implemented.

3.1.14 Test Pump Retrieval Well - Candidate retrieval wells at the site will be test pumped at a constant rate to collect the following data:

1. Concentration variations with time.
2. Well capacity.
3. Size and shape of the cone of influence around the well at varying pumping rates.
4. Drawdown and recovery data.
5. Observation well response.

Data collected during the test can be used to determine well efficiency, aquifer parameter values and optimum pumping rates for long-term recovery.

Each well will be sampled prior to conducting the pumping tests to determine what will have to be done with the water discharged during the test. Various options include:

1. Pump the well using an air lift and convey the water to surface drainage.
2. Pump the water into a temporary storage tank and pump it back down the well after the test is over.
3. Provide a temporary air stripper.
4. Spray irrigate the discharge over the contaminant plume using misting nozzles.

3.1.15 Develop and Explore Long-Term Pumpage, Treatment and Disposal Alternatives - If long-term ground-water pumpage at the site is determined to be necessary, the method of treatment of the water and its proper disposal will have to be taken into account. Many factors enter into a final recommendation for treatment and disposal. These factors will be evaluated as part of this task along with a wide variety of treatment alternatives.

Two alternatives are presently identified which may require some field testing. These options include disposing of treated water into the pits or onto a spray area up-gradient of the site in order to enhance the removal of residual contaminants in the soil and ground water. Specific tests to evaluate these options would include monitoring pit levels as they are being filled during pumping tests, conducting double ring infiltrometer tests, making a detailed soil survey of the area around the pits and making water balance calculations.

3.1.16 Develop Remedial Measures for Soils - A considerable volume of soil has already been removed from the former disposal area but depending on the results obtained from implementing the Sampling Plan, alternatives for dealing with additional contaminated soils may have to be developed. Since the removal of soils for disposal elsewhere or for on-site treatment is best done during excavation, a method for quickly quantifying relative soil contaminant concentrations in the field will be developed. Consideration of other soil

remedial measures may include but by no means be limited to flushing with treated water, in-situ aeration, soil shredding and enhanced biodegradation techniques. On the other hand additional testing may indicate that no further action with respect to soils may be necessary.

3.1.17 Analyze Data - All data will be analyzed to further define the environmental framework at the former disposal area and to further define the present distribution of contamination. The use of various simulation models will be investigated to determine if any model would be a suitable tool for predicting the future movement of contaminants and what changes might be expected in concentration levels due to various remedial alternatives. Maps, profiles, statistical analysis, diagrams, data plots and sorting routines will be used to analyze the large amount of data which has already been collected and will be collected during the implementation of this Work Plan.

3.1.18 Prepare RI/FS Report - A detailed report containing all applicable data (as appendices) will be prepared in accordance with published EPA guidelines. This report will emphasize those features and remedial alternatives most applicable to the Chemclene site. The report will concentrate on remediation as it applies to the present situation. It will also document all past activities which have been completed.

#### 4.0 CONCEPTS FOR REMEDIAL ACTION

##### 4.1 CONTINUATION OF REMEDIATION

The Chemclene Corporation has spent several hundred thousand dollars to completely remove the source of the contamination and adjacent contaminated soils at the former disposal area. They realize that additional study is needed to evaluate the success of this removal process and to determine if any other remediation is necessary. The principal purpose and focus of this Work Plan is to outline those work tasks necessary to continue to evaluate the present situation and to determine the feasibility of implementing additional remedial measures.

Additional remedial efforts might include removing or treating on-site soils surrounding the empty excavations and/or removing contaminated ground water from beneath the area of the pits. As part of the RI/FS process certain remedial alternatives may be implemented on a proto-type basis so that their effectiveness can be sufficiently evaluated. This Work Plan anticipates this testing.

##### 4.2 ELEMENTS OF REMEDIAL ACTION

4.2.1 Ground-Water Containment - It is anticipated that a ground-water containment program may have to be implemented at the former disposal area. The purpose of this program would be to break continuity in the residual ground-water contamination plume so that it will dissipate more quickly. Pumping in the aquifer beneath the pit area would also capture all contaminants that move vertically through the soil

and overburden profile either under natural or artificially induced recharge conditions. Locating a containment well(s), determining the size and shape of the cone of influence around this well(s), ascertaining flow rates and determining the quality of the discharge would be undertaken using a test pumping program. Standard pumping test techniques (constant discharge, etc.) would be used.

4.2.2 Ground-Water Treatment - Water pumped from the containment system may require treatment depending on discharge concentrations and intended use. The type of treatment, the effectiveness of treatment and the permit requirements for treatment would be addressed. In the event that in-well aeration or packed towers are used as a treatment process, air quality impacts and permit requirements would also be determined.

4.2.3 Ground-Water Disposal - Water produced by the containment and treatment system may be disposed of directly to surface drainage or may be used to flush soils and overburden materials. The feasibility of soil flushing via pit infiltration, overland flow or spray irrigation would be examined.

4.2.4 Soil Removal - While 6 tractor trailer loads of soil have already been removed, it may be necessary to remove additional contaminated soils. (This will depend in part on the criteria established for removal.) These soils would most likely be found in the walls and floor of the existing empty excavations. Criteria will be developed to decide what



soils should be removed and the Sampling Plan will identify both laboratory and field soil analysis techniques to quantify the concentrations of the contaminants present.

4.2.5 Soil Treatment - Soils containing low concentrations of contaminants may require treatment via in-situ or on-site methods. Specifically; biochemical methods, soil aeration and soil shredding techniques would be considered. Other soil treatment methods would also be identified and considered.

4.2.6 Refill Pits - At some point in the RI/FS process it may be beneficial to refill the existing excavations. The former disposal area would be regraded to natural contours and appropriate vegetation would be re-established. Once completed, the changes in containment concentration in the aquifer beneath the excavations could be evaluated and the need for further action determined.

#### 4.3 OTHER REMEDIAL ALTERNATIVES

The above list of remedial alternatives is not meant to be an exhaustive step by step search of all possible remedial options. As stated previously the list is meant to give some immediate direction to the RI/FS process and to provide some of the basis for the work tasks previously listed.

Upon approval of this Work Plan other remedial alternatives will be considered as data concerning the site is generated.

## 5.0 PLAN IMPLEMENTATION

### 5.1 QUALITY ASSURANCE

A quality assurance plan for the work effort will be filed with EPA. This plan will be submitted at the same time that the Sampling Plan is submitted.

### 5.2 SCHEDULE

Once details concerning the Work Plan have been agreed upon, a schedule for the implementation of individual tasks will be presented. Assuming that there are no major additions or subtractions to the tasks outlined, it is estimated that all additional field work could be completed and the RI/FS report be prepared and submitted within a period of 12 to 18 months.

### 5.3 COORDINATION

The Chemclene Corporation would take the lead in coordinating the activities of the various firms involved in implementing this plan. Earth Data would provide close technical support with primary responsibility for the soils and ground-water investigations. Several engineering firms are being considered to provide technical services regarding water treatment and VOC removal. SRE Analytics Incorporated, Hatboro, Pennsylvania will provide all necessary laboratory services and will be involved in the preparation of the Sampling Plan. Implementation of the Work Plan will also include engaging specialists such as well drillers, bioreclamation experts, biologists, risk experts and surveyors.

#### 5.4 COMMUNITY RELATIONS

In accordance with EPA requirements and in response to outside inquiries, Chemclene will meet with community leaders and nearby residents to discuss the status of the remedial effort. Since Chemclene's voluntary and cooperative response should serve as a model to other small companies identified as responsible parties, the importance of low key yet open community relations cannot be overlooked.

#### 5.5 DATA MANAGEMENT

Water quality data is being placed in a computer data base for easy retrieval and analysis. The format for the data base includes the following:

1. Sample I.D.
2. Date
3. Type sample (water, soil, air)
4. Constituent
5. Concentration
6. Units
7. Sample collector
8. Remarks

Data collected during the implementation of the Work Plan will continue to be collected on appropriate forms and in field notebooks. The quality assurance plan will discuss the management of field and laboratory data in more detail.

## 6.0 REFERENCES

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